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Poverty in Plenty

LAST week *The Times* opened its columns to a free discussion of the paradox of poverty in plenty, to which we have so often drawn attention during the past few years. In our last issue we quoted from a letter which appeared in *The Times* of April 4 under this heading, signed by Sir Geoffrey Clarke and nine other influential business men, appealing for an immediate investigation by Parliament of the fundamental principles which should govern our monetary system with a view to its reform in the interests of both producers and consumers. In a sympathetic leading article *The Times* agreed that the issues raised in the letter were worthy of serious, unprejudiced and searching discussion. We need hardly say that we are very pleased to see this important publicity given to a subject which we regard as of fundamental importance, not only to the railway industry, with which we are most concerned, but to industry generally, both in this and in every other country. The demands of railway trade unions for the restoration of the cuts in pay are bound up with this problem. The companies would be only too happy if they were in a position to add to the purchasing power of their employees without reducing that of their proprietors, and the solution of the monetary deadlock which prevents the attainment of this position would be universally welcomed.

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The Air Route to the East

Partly by quickening the service on the railway link between Paris and Brindisi, and partly by rearranging the Brindisi-Cairo flight, a whole day is to be saved in the Imperial Airways route to India and Africa as from this week. From our overseas columns it will be noticed that the Italian State Railways have put on a new night train in connection with this service from Rome to Brindisi, in connection with the 5.15 p.m. train from Paris to Rome, which will enable the air liners from Brindisi to set out on the trans-Mediterranean flight early enough in the morning to get to Cairo the same night, instead of as formerly having to come down at Athens for a night on the way. Thus the railway has played its part in accelerating this important long distance air service. We have already recorded that during the coming summer it is proposed to cut out the railway link altogether, and if this is actually achieved it will be interesting to see how much more time can be saved.

* * * *

The Week's Traffics

Latest returns cover the week including Easter Monday, 1934, and compare with a normal week in 1933, so that passenger traffics are up and general merchandise and coal receipts are down. Comparing the complete Easter holiday periods for the two years it will be found that passenger train earnings in the 1934 fortnight were down on all four group railways, the decreases being £13,000 or 1·22 per cent. on the L.M.S.R., £5,000 or 0·75 per cent. on the L.N.E.R., £11,000 or 2·43 per cent. on the Great Western, and £18,000 or 2·70 per cent. on the Southern. This may be attributed partly to the cold weather on Easter Monday and partly to more extended cheap fare facilities. Total receipts for the 1934 fortnight were, on the other hand, up in each case except the Southern, the improvement on the L.M.S.R. being £100,000 or 4·66 per cent., on the L.N.E.R. £91,000 or 5·88 per cent., and on the Great Western £40,000 or 4·51 per cent. The Southern had a decrease of £11,000 or 1·34 per cent.

	14th Week				Inc. or dec.
	Pass. &c.	Goods, &c.	Coal, &c.	Total.	Year to date
	£	£	£	£	£ %
L.M.S.R. ..	+ 1,000	− 55,000	− 37,000	− 91,000	+ 923,000 + 6·44
L.N.E.R. ..	+ 7,000	− 13,000	− 11,000	− 17,000	+ 934,000 + 8·94
G.W.R. ..	+ 3,000	− 29,000	− 33,000	− 59,000	+ 299,000 + 5·05
S.R. ..	+ 6,000	− 14,500	− 1,500	− 10,000	+ 239,000 + 5·31

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Grand Union Canal

The progressive policy pursued by the Grand Union Canal Company since 1929, when it was formed by the amalgamation of the canal properties of the Grand Junction with the Regent's Canal and Dock, has resulted in a steady increase of traffic in spite of the depression in trade. Last year the traffic originating on the company's canals amounted to 1,685,487 tons, an increase of 47,044 tons on 1932, though, owing largely to the cutting of rates due to road competition, tonnage receipts increased only from £131,852 to £131,956. In the course of his address at the recent annual meeting, Mr. W. H. Curtis, the Chairman, mentioned that conferences with the railway companies were being conducted on friendly lines. Expressing his deep regret at the loss of an "ideal colleague," Mr. Curtis said that the late Viscount Churchill, with his broad views and love of fair play, had always, notwithstanding his railway interests, the interests of the Grand Union Canal in view, believing that there was a place for canals in the transport system of the country. Including the main line of 144 miles between Brentford and Birmingham, the Grand Union Canal has the control of 283 miles of waterway. The important work of modernising the Warwick section of 40 miles between Birmingham and Napton, which is making good progress, will enable motor barges to come through to London.

The Princess Royal at Speed

There will be no further room for doubt as to the speed capacity of the new Pacific locomotives of the London Midland & Scottish Railway after the run from Liverpool to Euston which was made by *The Princess Royal* on Friday evening last, an account of which appears on page 644 of this issue. Over the 152·7 miles from Crewe to Willesden Junction this express has the fastest booking in the L.M.S.R. timetable, being scheduled to complete the distance in 142 min.; but the 4-6-2 locomotive, with a train weighing in all 380 tons behind the tender, cut this schedule to 134 min. 37 sec., and but for three signal checks experienced *en route* would have gained fully 10 min. Five times in succession the speed rose above the 80 m.p.h. level, and two of these maxima were as high as 85 m.p.h.; the average pass-to-pass speed from Whitmore to Wembley, a distance just under 140 miles, was 70·5 m.p.h. throughout, inclusive of both Stafford and Rugby slowings. Another notable feat was that of passing Whitmore, 10·5 miles from Crewe, in 12 min. 26 sec., notwithstanding the unbroken rise from the start; up a gradient of 1 in 269 speed rose to 59 m.p.h., and was maintained at that figure up 3¼ miles inclined at 1 in 177. In the other direction the engine had the same day worked the 10.30 a.m. express from Euston to Liverpool, with a 16-coach train weighing 504 tons empty and 530 tons loaded between Euston and Crewe, so that this combined evidence of haulage and speed capacity was particularly impressive.

* * * *

"De Stille Omgang" Special Traffic

Railways are frequently called upon to provide for traffic arising from congresses and similar meetings. Since 1922 the Netherlands Railways have had to provide special facilities in connection with the Roman Catholic religious procession round Amsterdam, held annually on two successive week-ends and known as the *Stille Omgang*, or silent procession, for which the number of participants has increased every year. The traffic inwards was dealt with on the nights of March 10 and 17 last, and outwards on the following evenings; 33 extra trains were run, one more than in 1932, with a total of 26,000 passengers, or 3,000 more than on the previous occasion. The Central station, having less ordinary traffic on Sundays, handled the special trains, although some were a little too long for the space available. Of the 18 arriving and 19 departing trains, two only were slightly late. In future the traffic is to be distributed more evenly over the two week-ends. The only trouble experienced was with one or two trains which proved rather too heavy for the 5400 class locomotives allotted to them. When this traffic began twelve years ago, one special train was sufficient and only 1,000 passengers had to be conveyed.

* * * *

American Railwaymen and the Six-Hour Day

The demand now being made by the Railway Labour Organisation for a six-hour basic day has been embodied in a bill prepared by the Railway Labour Executives' Association and presented to the Senate Committee on Interstate Commerce. At the hearing it was pointed out by Mr. J. C. Fort, General Solicitor of the Association of Railway Executives, that enactment of the law providing for a six-hour day for railway employees without any reduction in pay would not only increase by approximately $600,000,000 (£123,456,790) the operating expenses of the railways, but would threaten many of the large lines with bankruptcy. The bill would place an immediate added burden of expense on the railways of the sum mentioned in a normal year and of approximately $365,000,000 (£75,010,288) in a depression year. This staggering burden would fall upon the railways at their most critical period, and if the six-hour day with eight-hour pay had been effected in 1932, the railways as a whole would have failed even to earn their expenses. To impose this enormous extra expense on the railways without money to meet it would be a reckless course. The further impoverishment of the railways would certainly not be a contribution towards general recovery as it would impair railway service and, by rendering it inadequate, deal a further blow at industry.

* * *

The Big Bad Wolf

A notable effort to take advantage of a popular catchphrase has been made by the Chesapeake & Ohio Railway to advertise that it has the finest fleet of air conditioned trains in the world. Below a picture of a baby girl climbing into a sleeping berth is the title "Who's afraid of the big bad wolf?" . . . "Not little Peggy! She's a woman of experience who once before slept right inside a moving train and found it much more fun than sleeping at home . . . there's some kind of magic called air-conditioning that keeps kids clean on C. & O. trains. I wish we had it at home . . ." Modern advertising demands originality, and we have noticed praiseworthy examples on our own railways such as the "Vaudeville" poster which appears with such regularity in the London Transport tube lifts on behalf of King's Cross, Liverpool Street, and Marylebone. It should not be overlooked that there are many thousands of young people who have never travelled in a railway sleeping car either third or first class, and the Chesapeake & Ohio Railway is to be congratulated upon throwing the searchlight of its publicity on the benefits of sleeping in trains. Taking refreshment, writing, and reading are other travel amenities possible by rail, but not by other land or air services to anything like the same extent, which might easily form the subject of similar telling publicity.

* * * *

Commendable Action by Railway Servants

A good deal of the splendid safety record of British railways is due to the discipline and to the eternal vigilance of the men engaged in the operation of trains. This is occasionally revealed in the reports on railway accidents, and an admirable example came before us when we were reviewing the derailment and subsequent collision in which an L.N.E.R. passenger train was involved on July 8, 1932, when it was ascending the steep incline from the Metropolitan line to King's Cross main line station. Its engine came to a stand, and, when Signalman Chapman in the West box at the station found that the train had not arrived within the usual two or three minutes after he had received train-entering-section, he rang up the box in the rear and asked where it was. On hearing that it had left and was out of sight, Chapman took steps to obtain assistance for the missing train, on the assumption that it had broken down in the section. Colonel Anderson, in reporting on the accident, spoke of the commendable promptness of the man in initiating action when the train had exceeded its normal running time by only one minute. Now, in the Alne collision of December 6 last, which is referred to on page 645 of this issue, a down express ran into the obstruction caused by a collision on the up line and the result was that the down main and down slow lines were fouled. The guard of the express remembered that his train had passed a goods train on the down slow line so he hurried back to stop it, and it was pulled up about a quarter-of-a-mile from the scene of the accident.

Gauge and Speed

An important issue is raised by Mr. G. V. O. Bulkeley, the General Manager of the Nigerian Railway, in a letter which we publish this week. Mr. Bulkeley urges that it is desirable to work traffic at the highest possible safe speed so as to provide the most efficient transport service. As he points out, full value for capital expended cannot be realised unless the maximum speeds and axle loads possible are utilised. Speed is less dependent upon gauge than upon the other factors mentioned in Mr. Bulkeley's letter, namely, curvature, cant, height of centre of gravity, and, most important of all, the strength and condition of the permanent way. On the 3 ft. 6 in. gauge railways of Java and Japan speeds of 60 m.p.h. are not uncommon, and even higher speeds have occasionally been recorded on narrow gauge railways. There are many broad gauge railways in various parts of the world on which the maximum speeds attained are much lower than 60 m.p.h., and the limiting factors in such cases are nearly always the condition of the track and its strength. In this connection we recall the intriguing article which we published in THE RAILWAY GAZETTE of February 5, 1932, entitled "The Influence of Permanent Way on Operating Efficiency" by Herr Ludwig Schuller, in which a case was made out for justifying the expense of strengthening permanent way in certain circumstances in order to provide for increased axle loads, and, of course, higher speeds.

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Long-Span Beam Concrete Bridges

In connection with the doubling and strengthening of the main Algiers-Oran section of the P.L.M. Algerian system several important bridge works were necessitated. Reinforced concrete was adopted generally, because of the numerous advantages it gave in the local circumstances, notably the low maintenance cost. There were one or two places where, owing to restricted headroom, it was not possible to build arched bridges; therefore reinforced concrete straight-girder underbridges were designed despite the unusually long spans involved. One of unprecedented length for this type of construction has a clear span of 37 metres (121½ ft.); another is of 20 metres (65½ ft.). The bridges have to carry axle loads up to 20 tons. The plate-girder design was chosen and ordinary ballasted permanent way is carried upon a waterproofed concrete floor, built integrally with the main girders. Great care was taken in the construction and the concrete was consolidated by vibration. The bridges are fixed longitudinally at one end and supported at the other on cast-steel expansion plates. At both ends there is allowance, by means of articulation, for deflection movements. The bridges, after having been in use for over a year, show no signs of any defect, and it may be concluded that this type of construction is quite practicable for spans up to about 120 ft. The April issue of *The Railway Engineer* gives details of these bridges.

* * * *

Simplified Locomotive Numbering

At the present time the London Midland & Scottish locomotive stock comprises 8,226 engines, though the actual numbers in use rise to nearly 18,000. An important scheme of renumbering is therefore to be initiated, as described on page 644, with the object of bringing the whole of the numbers within the range of four significant figures, and so simplifying matters. The programme comprises the immediate renumbering of 293 standard locomotives, and a later and larger development includes nearly 800 standard engines, all of whose numbers will be grouped, according to type, and brought below 9999. Existing non-standard locomotives whose numbers are encroached on by these changes will have 20,000 added to their numbers until they are scrapped, and a number within the 20,000 range will thus indicate that the engine concerned is, in effect, on the duplicate list. One further simplification which might have been adopted in such a scheme as this is for the first engine of each series to have "1" as the last significant figure of its number, instead of "0." The renumbered 2-6-2 L.M.S.R. tanks, for example, will run from No. 1 to No. 70, and it is thus clear from the final number that the class contains 70 engines; but the 3-cylinder "5X" 4-6-0's will run from 5500 to 5551, and 1 must be added in the latter case to the final "51" to arrive at the total number in the class, which is 52 engines. A small point, doubtless, but not without its importance.

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Continuous Locomotive Working

Some important considerations relative to locomotive working are dealt with in an article on page 629 of this issue. Our correspondent's main contention is one which requires no proof but does not appear to receive the close study that it merits; it is the simple fact that a locomotive is only earning revenue when it is engaged in haulage. Lengthy through locomotive workings, such as London-Glasgow or London-Edinburgh, provide the best illustration of continuous haulage possibilities; at the other end of the scale come intermittent branch line services which nevertheless require the services of a locomotive or locomotives continuously lighted up and manned. One correspondent tilts at the more or less haphazard method by which time-tables, like Topsy, have "just growed," and at the watertight compartment system by which time-table alterations are so often passed, as a *fait accompli*, to the operating authorities to work into locomotive rosters as best they can. He claims, with some justification, that the best possible use can be made of locomotives only when the same authority is responsible both for time-table making and rolling stock rostering, and that a complete recasting of time-tables—a point we have often stressed in these columns—with efficient locomotive rostering kept prominently in view, might enable substantial operating economies to be achieved.

* * * *

Locomotive Boiler Repairs

In his paper read before the Institution of Locomotive Engineers on "Locomotive Boiler Repairs in Headquarter's Shops," Mr. R. I. Kirkland stated that the heaviest repair carried out in a certain locomotive shop consisted of fitting a new firebox, half sides to the steel casing, bushes in the steel casing where required, and repairs to the steel door and throat plates. The cost of this is approximately equal to 75 per cent. of that of a new boiler, and, if an uneconomic repair is to be avoided, it is essential that those responsible for repairs to boilers should be furnished with information respecting the average life in years and mileage of each type of boiler before being scrapped; also the new value of all such types and the approximate credit from the sale of scrap boilers. Remembering that the credit arising from the sale of a scrap boiler is offset against the cost of a new one, it is clear that the fitting of a new firebox, with its accompanying repairs, would not generally be justified if the boiler under consideration was approaching its scrapping age. There must, of necessity, be exceptions in cases where the boiler has always worked in good water districts and the steel shell is in a condition to outlast a new firebox under normal conditions of working. Thus only a proportion of boilers are given new fireboxes, those which have pitted barrels not being deemed suitable unless the mileage is low.

Canadian Pacific Railway

BESIDES possessing one of the largest railway systems in private hands, this company owns and works steamships, hotels, telegraphs, a news service and sleeping cars, and has large landed interests. Having a length of main line (Montreal to Vancouver) of 2,893 miles, the company operates altogether 17,018 miles of line in Canada, and its controlled lines and separately operated subsidiaries in Canada amount to 70 miles, and in the United States to 3,890 miles (including the Minneapolis, St. Paul & Sault Ste. Marie Railway—the "Soo" line—of 3,251 miles). During the year 1933 the abandonment of 19 miles of line between Bolton and Melville and 21 miles between Burketon and Lindsay was completed. From 1911 until 1930 inclusive the ordinary or common stock received dividends of 10 per cent., but in 1931 had to be content with 5 per cent., and in 1932 and 1933 has received nothing. In 1932 only 2 per cent. was paid on the 4 per cent. preference stock, nearly all of this payment being chargeable to surplus, and for 1933 this stock receives nothing.

A distinct improvement over the previous year is, however, shown in the annual report for 1933. Though gross earnings were $9,667,026 less than in 1932, working expenses were reduced by $10,439,147, so that net earnings improved by $772,121. Passenger train earnings declined $2,437,535, decreases being recorded each month except December. Freight earnings declined $6,196,147, mainly due to reduced grain traffic, there having been a decrease of 34 per cent. in such traffic during the period August 1, the beginning of the crop year, to December 31. Working expenses, including all taxes, amounted in 1933 to 81·74 per cent. of the gross earnings, as compared with 83·79 per cent. in 1932. Excluding taxes, the operating ratio was 78·12 per cent. against 80·42 per cent. A reduction of $2,182,290 was effected in maintenance expenses, and of $6,987,492 in transportation expenses, the ratio of transportation expenses to revenue having improved from 40·8 per cent. in 1932 to 38·2 per cent. in 1933. Fuel consumption also improved. After protracted negotiations and proceedings before boards of conciliation under the Industrial Disputes Investigation Act, further revisions of wages were made, so that at the close of the year, except in respect of a group of employees with whom negotiations were unfinished, a deduction of 15 per cent. from basic rates of pay of all classes of officers and employees was in effect, and in the case of the higher positions in the service 20 per cent. The deduction of 25 per cent. from directors' fees was continued, and the deduction from the President's salary increased at his request to 40 per cent. Some operating figures are compared in the accompanying table:—

	1933.	1932.
Mileage open	17,018	17,045
Train-miles	33,235,144	36,972,491
Gross tons per freight train-mile	1,515	1,426
Ton-miles	9,353,117,592	10,067,420,032
Fuel consumption per gross ton-mile, lb.	112	114
Number of passengers	7,173,527	7,916,266
	$	$
Freight revenue	85,734,676	91,930,823
Passenger revenue	14,279,769	16,717,303
Gross earnings	114,269,688	123,936,714
Total working expenses	93,407,582	103,846,729
Net earnings	20,862,106	20,089,985

Special income amounted in 1933 to $6,222,481, against $4,537,426 in 1932. This consists of the income from investments, and the net receipts from steamships, hotels, &c. In 1932 special income was arrived at after deduction of $500,000 for steamship depreciation, whereas in 1933 an amount of $3,854,481 was appropriated from surplus for steamship replacement. Fixed charges increased from $23,619,529 to $24,388,615, and pensions from $750,000 to $1,438,812, leaving a balance of $1,257,161 to be transferred to profit and loss and surplus revenue account. Pension payments will in future be charged to working expenses. During the year co-operative measures with the Canadian National Railways were put into effect, such as the pooling of train services between certain terminal points, to which we referred on page 569 last week, and the consolidation of certain terminal facilities, which have proved mutually advantageous in the direction of economy.

* * * *

The Alne Collision

AUTOMATIC signalling has now been in use in this country for nearly 33 years, but, excluding three on the London tubes—which are a law unto themselves—there have been only four accidents reported upon during those thirty-odd years that have occurred on automatically-signalled territory. Those mishaps were: (1) Canfield Place, L.N.E., August 31, 1924; (2) Fleet, Southern, November 4, 1926; (3) Hampstead tunnel, L.N.E., January 16, 1933; (4) Three Bridges, Southern, January 28, 1933. The Canfield Place accident, as related in THE RAILWAY GAZETTE of January 2, 1925, was due to a passenger train, after having stopped at an automatic signal, proceeding under the stop-and-proceed rule but not with the "great caution" ordered. At Fleet, as we recorded in our issue of May 27, 1927, a milk train, which had broken down, was protected by a home and distant signal, but the driver of the following train ignored them. The Hampstead tunnel collision, as we showed on July 14 last, was near the scene of that at Canfield Place. In that case the driver of the following train passed the second signal in the rear of the first train at "yellow," but, in the smoke and steam that filled the tunnel, he missed the next signal at "red" and collided with a train, the engine of which, owing to slipping, was proceeding very slowly. The facts of the Three Bridges collision were given in THE RAILWAY GAZETTE of August 18 last, and it may be remembered that a passenger train stopped at an automatic signal and then proceeded under the stop-and-proceed rule. There was a train in the section for which the next signal was at "yellow." The driver of the former train took that signal as his and accelerated; he missed seeing the tail lamp of the train in front and the collision resulted. Now, at Alne, on the York and Northallerton section, there was an almost similar occurrence on December 6, as to which the report by Lt.-Col. Woodhouse is summarised in our present issue. Therein it is further to be seen that this was the third such accident in this automatically signalled area, as there were collisions at Poppleton junction, outside York, on August 27 and on September 10, due to drivers, running under the stop-and-proceed rule in clear weather, failing to stop short of trains standing at a colour light signal ahead. In any consideration of the Three Bridges and the later three collisions it must be remembered that the signals concerned were of the high power colour light type.

The accident now under review appears to call for consideration under two heads: (1) the stop-and-proceed rule, and (2) the weakness of the light of the tail lamp when it has to compete with the glare of a colour light signal. As most of our readers know, the stop-and-proceed rule is an essential in automatic signalling, in order that a train, held at a "red" signal due to a failure in the mechanism or in the controlling track circuit, shall not be detained there when, the section ahead being unoccupied, it might proceed on its journey. As a matter of historical interest, it may be noted that when the Hall automatic signals were brought into use on the North Eastern Railway thirty years

ago a rule to meet those conditions was introduced which read:—

16.—When a train has stood at a home signal at "danger" for one minute the driver must give one long whistle, and if there be no box or if no signalman is on duty at the box, he may, after that period, pass the signal at "danger," proceeding with great caution to the next home signal, at which he must also stop one minute if it is against him and repeat this at each home signal found at "danger." The train must be run at such a speed that it can be stopped short of any obstruction.

When the Marylebone-Neasden signals were opened in April, 1924, the relevant rule read:—

When a driver finds an automatic signal at "danger," he must, if the signal indication be not changed in the interval, wait one minute, then give one long whistle and pass the signal at "danger," proceed with great caution to the next signal ahead, keeping a sharp look-out and running at such a speed as will enable him to stop short of any obstruction that may exist.

When Sir John Pringle reported on the Canfield Place collision, with which the rule in question was concerned and where the erring driver did not proceed "with great caution," he recommended that the rule should be amended so as to instruct the driver to run "at a speed not exceeding 5 m.p.h. to the next signal ahead, unless, in the meantime, the light of that signal is observed to change to 'caution' or 'clear,' keeping a sharp look-out and being prepared to stop short of any obstruction." The corresponding rule on the Southern Railway calls for a stop of three minutes, and not for one minute, and it definitely lays down a speed "not exceeding 5 m.p.h." It then has the important addition:—

In the event of a signal which is exhibiting an illuminated letter A, being passed at "danger," and if the next signal, when appearing in sight, is found to be showing a green, two-yellow or one-yellow aspect, the driver must not assume that it has been lowered for his train to proceed, but must satisfy himself by personal observation that the whole of the section up to that signal and to a point about a-quarter-of-a-mile ahead of such signal is clear of obstruction, and he must continue to proceed cautiously as far as the line is clear or to the next signal beyond.

The new rule-book that came into force at the commencement of last year has a rule, 55 (g), to cover detention at automatic signals. It is quoted in our present summary of the Alne accident report and it will there be seen that it is not as definite as the Southern rule, in that it says only that if the next signal is also an automatic signal and is in the "caution" or "clear" position the driver must continue to proceed cautiously to the next stop signal. It was the failure of the driver of the second train to act up to the rider to the stop-and-proceed rule that was the cause of the Alne collision. The man had had a long experience of the automatic signals between Alne and Thirsk, that were opened 30 years ago. As Colonel Woodhouse says, Driver Logan's "hasty assumption, when he saw the signal at 'green' that it had been cleared for him, is difficult to understand, inasmuch as he admitted that he had often passed the semaphore signals existing between Alne and Thirsk under the stop-and-proceed rule and he ought therefore to have been well aware that a green light ahead of him in such circumstances might apply to a train already standing in the section." It will be noted from our reproduction of Colonel Woodhouse's conclusions that he recommends a speed limit of 5 m.p.h. That, as we quote above, is the Southern rule.

The drowning of the light given by a tail lamp by the much greater brilliance of a colour light signal had already become a vital factor as a consequence of the Three Bridges collision and it will be seen from the paragraph in our summary, that immediately precedes the conclusion of the report, that one of the matters engaging the attention of the companies is the practicability of increasing the brilliance of tail lights, at any rate in areas where automatic colour signals are in use. We would, however, suggest that this improvement in tail lamps should be general because (1) a poor light in a tail lamp contributed to the collision at Pontllynfraith reported in THE RAILWAY GAZETTE of November 24, (2) side lights have been abolished, and (3) installations of colour light signals are now increasing in number and no longer are only in busy areas.

* * * *

Machine Tools in Railway Shops

THE machine tool takes, of necessity, a leading part in the production of railway rolling stock, and consequently developments in its design are closely watched by those responsible for the building and repairing of locomotives, carriages and wagons. The paper read by Mr. T. N. Woof before the Institution of Locomotive Engineers on Thursday last was confined to a consideration of the practice followed in three sections of the works, namely the tool room, the machine shop and the wheel shop. The author, at the outset, called attention to the fact that whereas ten years ago the machine tool designers were ahead of the cutting medium, the tremendous advance in cutting alloys in the past three years is now resulting in demands for higher spindle speeds, combined with absolute rigidity of the machine. This possible increase in speed serves to show that the day of the cone pulley machine is passing, except in special cases, for the reason that machines should be able to run at the correct speed for the work that is being machined. Stress was laid upon the importance of tooling equipment and jigs, for on such equipment depends the production of a shop. With regard to the machine and brass shop, probably more developments have been seen in recent years than in any other department. Small capstan lathes and cross sliding turret lathes have replaced the old brass finishers' lathes in the brass shop, while the improvement in many of the tools utilised for a variety of purposes in the machine shop, and their ability to turn out work with greater facility and a corresponding reduction in the floor to floor times, have been very greatly marked.

Mr. Woof paid special attention to the advances made in connection with the grinding method in railway shops. In these days of interchangeability, the limits of accuracy sought by locomotive engineers demand that machining times on the capstan or turret lathes, planing or milling machine should be increased to allow for such limits, combined with better finish, or that the shopmen should work to wider tolerances and then finish by grinding. At the same time, the advance in recent years of grinding machinery from a means of obtaining precision only to a machine tool capable of removing heavy stocks in the minimum time to varying tolerances, has been made possible by the grinding machine maker designing his machine to carry larger and wider wheels at higher wheel speeds. This calls for higher working speeds and the provision of sufficient rigidity to withstand heavier cutting pressures. It must, however, be realised that the abrasive wheel manufacturers, by their efforts in putting forward faster cutting wheels with closer control and more duplication than in former years, together with a capacity for higher cutting speeds, have helped to make the modern grinding machine a productive member of the machine tool class. To emphasise the economies obtainable by the grinding method, Mr. Woof cited a case in which eight men were employed on an average timing of eight hours for four days on re-truing the horn cheeks of one locomotive by the ordinary method, whereas two men operating a grinding machine performed the same work in three hours, or, in other words, six hours by grinding against 256 by older methods.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of Correspondents)

Safe Speeds and Axle Loads on Colonial Narrow Gauge Railways

c/o Bank of British West Africa,
37, Gracechurch Street,
London, E.C.3.
April 6

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The speed at which trains can travel on any railway is a determining factor in its traffic operating and in its commercial activities. In considering this fundamental matter, the precise value which is set upon the time factor by the indigenous population of any Crown Colony may be disregarded.

The time is opportune for a closer standardisation of speeds and locomotive axle loads on Colonial narrow-gauge railways. At present there appears to be a variety of determining and conflicting factors which leave the final decision in the hands of each railway's chief civil engineer. This postulates a discretionary power which may be influenced by personal temperament; which places a somewhat unfair responsibility on the chief civil engineer, and which cannot be wholly satisfactory to any management.

Safe speeds are influenced by track curvatures and modified by the super elevation given. This does not, however, finish the matter; as spacing of sleepers, the design of these in regard to side thrust and holding power, together with the ballasting section provided, all play a part. Further, the weight of the track, the wheel arrangement and balancing of locomotives, together with the height of their centre of gravity (and that of rolling stock) are further factors. It is a matter for no surprise that chief civil engineers are cautionary in the speeds which they lay down for Colonial railways.

The senior traffic and commercial officer must, however, have the highest possible safe speed as a maximum to which he can go in fixing his time-tables and with which he can undertake an efficient transport of freight and passengers. Full value for capital expended is not being realised unless the maximum speeds and axle loads possible are being utilised in the operation of 100 per cent. trains.

An excuse for introducing this fundamental but all-important matter lies in the divergency of practice and opinion on different railways of similar gauge. For example, taking the 3 ft. 6 in. gauge on the railways of Japan and Java; trains are now regularly operating at scheduled speeds of 46 miles per hour. Such speeds are not attained on all 3 ft. 6 in. gauge railways. On the South African Railways, where the possibilities of the 3 ft. 6 in. gauge have probably been developed up to the limit—a maximum speed of 55 m.p.h. is, I believe, allowed on the straight: also that a Garratt locomotive has, on test, ridden the curves at this speed satisfactorily. In a paper read before the Institution of Locomotive Engineers in 1932, Lt.-Col. F. R. Collins, D.S.O. (formerly Chief Mechanical Engineer of the South African Railways), stated that round curves of 1,320 feet radius having 2⅜-in. superelevation, 45 m.p.h. is allowable with a 3 ft. 6 in. gauge. A speaker, in the discussion which followed, quoted speeds of between 40 and 50 m.p.h. on the metre gauge Argentine State Railway, curvatures included.

It is appreciated that weight of track plays an important part, and this is bound up with locomotive axle loads. The investigations of the Bridge Stress Committee showed that, in modern locomotives, balancing was so good and running so smooth that at speeds of as high as 90 m.p.h. hammer blow on the track was not important. The effect of this has been noticeable on British railways where the former axle-load of 20 tons on standard tracks has been raised to 22½ tons. Is there any reason why the locomotive axleloads allowed on Crown Colony railways should not now also be increased in relation to the weight of track and strength of bridges?

During the discussion on the paper mentioned above it was suggested that, so far, the maximum speeds allowed on Crown Colony railways were roughly equal in m.p.h. to the gauge in inches. This was, however, questioned as a final figure by another speaker, who quoted from a paper read in 1929 before the Institution of Mechanical Engineers by Professor F. C. Johansen, who claimed that, as a result of experiments made with comparative models of vehicles built to scale and of similar materials—the safe speed might be proportional to the square root of the gauge. I quote the following table from the Journal of the Institution of Locomotive Engineers in this respect:—

Gauge	Normal speeds (Based on standard gauge = 56½ m.p.h.)		Maximum speeds (Based on standard gauge = 80 m.p.h.)	
	$va\sqrt{G}$ m.p.h.	$va\sqrt{G}$ m.p.h.	$va\sqrt{G}$ m.p.h.	$va\sqrt{G}$ m.p.h.
5 ft. 6 in.	61	66	86½	93½
Standard	56½	56½	80	80
3 ft. 6 in.	48½	42	69	59½
2 ft. 0 in.	37	24	52	34
1 ft. 3 in.	29	15	41	21½

From the foregoing it will be seen that divergence of both opinion and practice exists. It would be of real advantage could the Institutions of Civil, Mechanical and Locomotive Engineers produce an authoritative joint report in which the whole matter of recommended safe speeds and axleloads on Crown Colony railways were standardised; possibly on a basis of track sections (including track, sleeper and ballasting), with some relationship between the gauge and the height of centre of gravity in rolling stock and locomotives. In the meantime it would carry these interesting and important matters a step further could the chief civil engineers of all the Crown Colony railways express their views and formulate recommendations through the medium of your valuable and informative paper.

On the operating side; it is clear that to set a maximum speed for a section of track with a general warning to drivers to slow up on sharp curves has the result of slowing the speed through the entire section (especially in the case of native drivers); as the degree of curvature is hard to determine when approaching a curve. An effort is being made on the Nigerian Railway to improve matters in this respect by erecting a clear speed restriction sign just before the commencement of every curve round which the standard speed for the section does *not* apply. These signs are being fitted with scintillating reflex lenses for night running.

Yours faithfully,
G. V. O. BULKELEY,
General Manager, Nigerian Railway

[Editorial comment on this important subject will be found on page 621.—ED. *R.G.*]

The Signal Engineer's Department

London.
April 9

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Regarding the letter from "Retrenched from Signalling" dated March 22, contained in your issue of March 30, I consider the writer could have advantageously added the following:—

The expense incurred owing to a single serious accident would probably be sufficient to cover the outlay necessary to provide efficient installation, maintenance and supervision, and so avoid what will inevitably happen if signalling continues to be treated in the same category as telephones and bells, where faults only call possibly for bad words but not risk of life.

Yours faithfully,
"SAFETY"

PUBLICATIONS RECEIVED

Deterioration of Structures in Sea Water. Edited by J. Purser, M.Sc., B.A.I., Assoc.M.Inst.C.E., and H. J. Grose, M.C., B.Sc. London: His Majesty's Stationery Office. 9½ in. × 6 in. Pp. 56. Price 1s. 6d. net.—The Committee of the Institution of Civil Engineers has been investigating the action of sea water on timber, metal and concrete since 1916, and has issued annual interim reports, of which this is the fourteenth. It contains an account of the final examinations of iron and steel specimens which have been exposed to sea-water action at Plymouth and Colombo for 10 years, together with papers on recent developments in the preservation of timber and concrete under similar conditions. There are 44 illustrations of the Plymouth and Colombo specimens showing the effects of exposure. The report concludes with abstracts of reports on the destruction of timber by marine organisms and modern American practice in its protection.

The Wheels of Ind. By John W. Mitchell, A.M.Inst.T. London: Thornton Butterworth Limited, 15, Bedford Street, Strand, W.C.2. 9 in. × 6 in. 314 pp. Price 12s. 6d. net.—This is another book written by an Indian railway officer, and describes his experiences in that sub-continent. It is essentially a readable volume which will appeal to a wide range of readers, though to none more than to those who have been in India. But to those who have not, it can be recommended as a well-balanced and—with one or two exceptions—unexaggerated picture of ordinary everyday Indian life. Railwaymen in particular will be interested in its clear and authentic details of the working of an Indian railway system, with all its problems great and small—especially the latter—the solution of which conduces to the remarkable efficiency of the whole vast machine. The activities of the great twin industries, coal, and iron and steel are vividly described. But even more life-like is the human side of the narrative, with its many sidelights on Indian life and character and amusing yarns of man, beast and reptile—not to mention the insects. Mr. Mitchell is a very modest *shikari*, but on that account his descriptions of his own and others' adventures in pursuit of big and small game are all the more convincing, and it is obvious that he has taken the trouble to study the ways and wiles of the jungle folk. We found his chapters upon Puri and its Juggernaut Festival among the most interesting, and his first-hand experience of the manner in which the hundreds of thousands of Indian pilgrims are dealt with by the railways—a striking tribute to their organisation—greatly enhances the value of the narrative. In this connection the author's explanation of the Hindus' means of circumventing caste difficulties when travelling by train is both instructive and amusing to the Westerner. The work is profusely and excellently illustrated and, as well as photographic reproductions, there are several maps.

The Early Years of Modern Civil Engineering. By Richard S. Kirby and Philip G. Laurson. New Haven, U.S.A.: Yale University Press. London: Humphrey Milford, Oxford University Press, Warwick Square, E.C.4. 9½ in. by 6 in. by 1½ in. 324 pp. + 76 pp. illustrations. Price $4, or 24s., net.—In the belief that engineers know little of the history of their profession, the authors, each of whom is an Associate Professor in Yale University, have gathered material relating to the pioneers and pioneering work in Europe and America of the eighteenth and part of the nineteenth centuries. During this period there were few, if any, textbooks or handbooks, and no specialised periodicals or associations of engineers in the modern acceptance of the terms. Consequently the material concerning early engineering has to be sought from widely scattered sources, with a considerable portion of it in foreign languages. The authors have evidently conducted their researches systematically and over a range of publications, both contemporary to the period under review and of the modern authoritative resumé classes.

The results of these labours, as presented in this well annotated volume, should prove of very considerable value to future students as well as provide fascinating reading for the practical engineer. The book is not encyclopædic in scope, but is intended rather to touch upon early epoch-making achievements in such a way as to stimulate further reading. The treatment adopted is to divide civil engineering into ten categories, namely, surveying, canals, road and pavements, railroads, bridges, tunnels and subways, waterworks and water power, sewers, river and harbour improvement, and materials. To each a chapter of an average length of 28 pages is devoted, and an additional chapter gives tabloid biographies of the leading pioneers.

A regrettable feature is that a volume of this character should be marred by a large number of misprints (not corrected by an erratum slip) extending even to dates, which are given rightly in one place and wrongly in another. For the benefit of historical accuracy, we suggest that the publishers should prepare a slip and make efforts to ensure its insertion, at any rate in those copies known to be in libraries and other places of public reference.

The many illustrations, printed on separate art plates interleaved with the text, are deserving of special praise. They have been extremely well chosen and beautifully reproduced. Moreover, the origins are indicated, which is a commendable feature in an historical work. Indeed, the careful annotation of both illustrations and text in itself justifies the inclusion of the book in all engineering libraries and does much to make amends for the textual misprints.

Der Eisenbahntriebwagen: Technisch-Wirtschaftliche Untersuchungen über seine Verwendungsmöglichkeiten. The Railcar: A Technical and Economic Investigation of its Possibilities, by Dipl. Ing. Dr. Kurt Friedrich: Berlin: Ver Kehrswissenschaftliche - Lehrmittel - Gesellschaft, Voszstrasse 6. Pp. 175. 6 in. × 8¼ in. Price RM. 3·95.—Germany is a country in which a vast amount of attention has been given to the railcar, and its uses, and a great deal has been written on the subject, both in books and articles. This book deals with the whole subject in a highly condensed form. It does not, of course, bring us to the most interesting cars of all, those developed for the Berlin-Hamburg express service, but numerous vehicles of all kinds find a place in its chapters. Many useful references are given to articles in foreign journals, and the experience gained with railcars in other countries is taken into account. Vehicles taking current from overhead wires are included, the field covered being thus a little wider than the term railcar as usually used.

The author deals with the construction of railcars so far as this affects the economic and traffic aspects of the question, with costs, and the methods of arriving at them, with comparisons with locomotive operation, and with traffic demands and their effect on the use of railcars, setting out the principal cases where he considers special advantages would attend railcar services. There is a supplement to the main part of the text in which detailed figures are given, without actually referring to the names of the stations, of the costs of working on certain sections where railcars have been put to work. There is also a section dealing with costs of working of some North American lines. A comprehensive bibliography concludes the book. Progress has been so rapid in this sphere that some of Dr. Friedrich's work is even now probably superseded, but the book is a valuable contribution to the subject, and it must have entailed much research to collect all the data contained in it.

Norfolk Resorts.—The varied attractions of Norfolk as a holiday county are well presented in the text and pictures of this booklet, which is published by the Midland & Great Northern Railways Joint Committee. A glance through the illustrations alone is a stimulant towards an East Coast holiday. Full-page plates illustrate the animation of the larger resorts, such as Yarmouth and Lowestoft, the peaceful charm of Broadland, and Norfolk's wealth of splendid architecture. Brief and useful descriptive notes are given on coastal and inland holiday centres, extending to a number of the less-frequented resorts accessible by road services from M. & G.N. stations. A list of interesting and historic places to visit appears on the last page.

THE SCRAP HEAP

"Fox chased into railway siding." A-shunting we will go.—*From "The Star."*

* * *

AT KING'S CROSS

Anxious enquirer, meeting train: "Why don't you wear an ear *trumpet?* For the third time, is this the Queen of Scots?"

Jocose individual, very merry and bright: "No, it's the King of Spades."

* * *

A LECTURE IN A TRAIN

Some time ago I left Waterloo by the midnight train for Plymouth. The compartment was full of silent Englishmen. Mile after mile was rolled off; then one passenger suddenly stood up and said he would deliver a lecture if the rest would listen. He gave us "Athens as I saw her."

Later the lecturer was met in Tooting Central Hall by a stranger who said he had come to hear him again. "Where did you hear me before?" asked the speaker.

"In a railway train, sir," was the reply, "and you gave me the most delightful trip that I ever enjoyed."—*From a letter to the Editor of the "Daily Mail."*

* * *

A RAILWAY RUN ON GARBAGE

The Guernsey Railway Company—some would call it an electric tramway, but that is its official title—is a public service in the broadest sense of the term. In addition to providing transport it sells ironware, specialising in kitchen ranges, instals electric power plant and indulges in mechanical and marine engineering. All these accomplishments are blazoned forth on the walls of its railway depot. Less prominence, however, is given to yet another function, that of official refuse destructor to St. Peter Port. Its trams are propelled by the roast garbage of old Guernsey. Only rarely does the supply fail so that its generating station boilers have to be fired with coal.

* * *

MORE TROUBLE AT OXFORD

The austere attitude of Oxford University authorities towards the Great Western Railway in its early days has already been noted in these columns. Further friction occurred in the summer of 1865, when the directors of the railway under the Chairmanship of Mr. Richard Potter, decided to erect a carriage and wagon works at Cripley Meadow, Oxford, a site at the back of the old Oxford station. The Oxford Corporation was anxious to add to the commercial activities of the city, but the University authorities were aghast at the mere thought of such vandalism. Collegiate Oxford rose in its fury. The Vice-Chancellor bearded the Great Western lion in his den. But the company had good and sufficient reasons for holding its ground and its shareholders fully supported the directors in their definite reply, which was, "The lease from the Corporation has been signed, sealed and delivered."

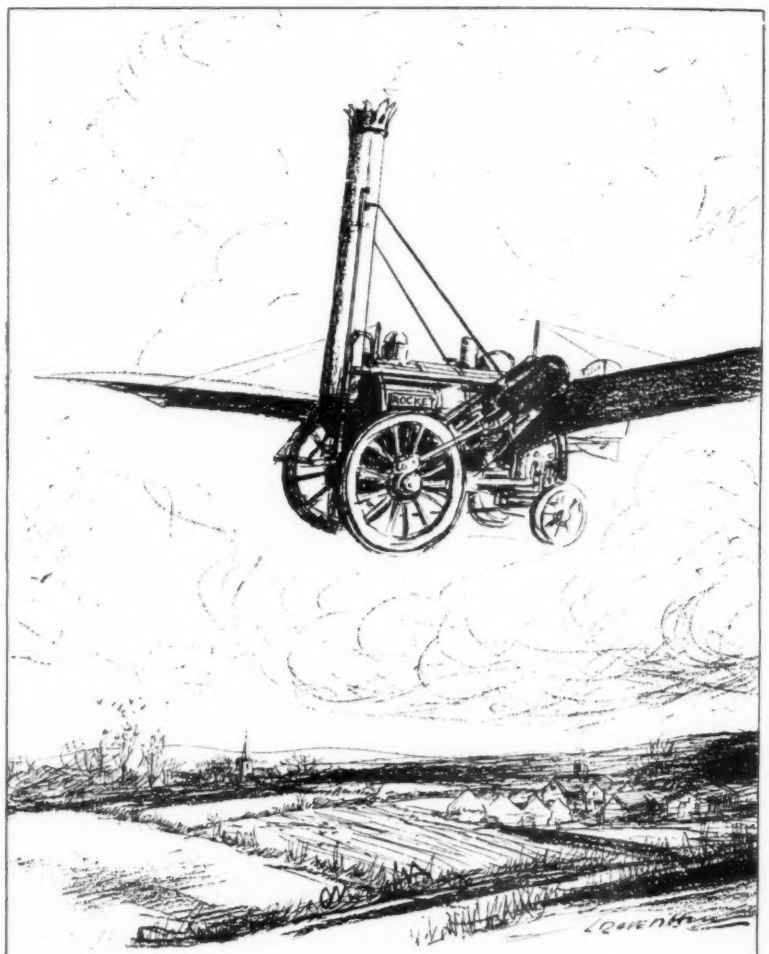
Later in the same year, Mr. Richard Potter resigned from the Chairmanship of the Great Western Board of Directors and Sir Daniel Gooch was appointed his successor. Gooch's respect and esteem for Oxford was proverbial, and as the need for reducing railway expenditure and avoiding expensive commitments had become imperative, further consideration of the suggested Oxford carriage works scheme was left in abeyance for some 2½ years, when Gooch proposed a much less grandiose plan than had originally been suggested. The chosen situation for the new scheme was, however, not in Oxfordshire but in the vicinity of Gooch's former labours—a site adjacent to the Great Western Company's locomotive works at Swindon, Wilts.

Thus was the breach with Oxford healed, friendships consolidated and Swindon rewarded for its good work in repairing Tom Tower's weathercock, as has been previously described.

* * *

DEVELOPMENTS AT BEKONSCOT

Large sums of money are being spent by various health resorts all over the country to bring them up-to-date and make them more attractive. Our readers will be interested to know that a roadhouse, complete with swimming pool, has been added to the already numerous amenities of Bekonscot. As we recorded in our issue of March 30, the public will again have the opportunity of visiting Bekonscot from April to October, but owing to space limitations they will not be able to bathe in the swimming pool.



THE ROCKET GOES UP AGAIN

Reproduced by permission of the proprietors of "Punch"

As "Punch" sees the decision of the main-line railway companies to run additional air services this year

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

Railwaymen share in Brazilian railway's profits—Sound Indian railway finances—Influence of Trans-Saharan Railway on Gibraltar tunnel scheme—Reduction in length of Mainz tunnel—Rome-Brindisi express for International air services—Bologna-Florence Direttissima inauguration

BRAZIL

Central of Brazil Railway

Various stations between Rio and São Paulo have recently been rebuilt and the largest of these undertakings, the remodelling of the terminal station in São Paulo, will very shortly be completed. This new station is expeced to be opened officially in the course of a few weeks.

The new spur line, serving the outskirts of São Paulo, and leaving the main line approximately mid-way between Mogy das Cruzes and the terminus, to which allusion was made in THE RAILWAY GAZETTE of September 8, 1933, was recently brought into use, thus benefiting the inhabitants of the thickly-populated suburbs of the city of São Paulo, in addition to providing a convenient alternative route for traffic.

Railwaymen Share in Profits of Railway

It is reported that, on the advice of the Federal Interventor in Rio Grande, the Provisional Government has sanctioned the distribution of a bonus amounting to 30 per cent. of the net earnings of the Viação Ferrea do Rio Grande do Sul among the employees of that railway. This is to be a permanent arrangement and the first payment of 1,800 contos will be made now that the balance sheet for 1933 shows a sum of 6,000 contos as net earnings. This is the first occasion on which the staff of a Brazilian railway has been given the opportunity of sharing in the profits of the concern for which they are working, with the incidental incentive to produce results to which their own personal benefits will be directly proportionate.

The 389 km. from Santa Maria to Porto Alegre on the Rio Grande do Sul line are now being stone ballasted and some 329 km. of this work have already been completed.

The report of the Railway Federal Inspection Department has been submitted to and studied by the Minister of Communications, and orders have been given for a start to be made with the construction of the line linking up Dom Pedrito with Sant' Anna do Livramento. This new link, when completed, will enable passengers from the Uruguayan frontier at Rivera and Sant' Anna bound for the important towns of Bagé, Pelotas and Rio Grande (and *vice versa*) to reach their destinations much more quickly than by the old and circuitous route via Cacequy. At the same time, exports from a wide area, destined for shipment abroad via the port of Rio Grande, will be delivered there in roughly a third of the time taken at present, and this will undoubtedly result in diversion to the new direct line of traffic which has hitherto flowed towards Montevideo, via the Central Uruguay Railway. The work will be carried out by the Railway Battalion, and a grant of 1,500 contos has already been made for the financing of the initial stages.

On December 23 last, the lines belonging hitherto to the Quarahim-Itaquy-São Borja system (at one time the Brazil Great Southern Railway Company) were linked up to the Rio Grande do Sul system, of which they now form a part, through traffic using the connection on and from that date. The lines of the two systems previously ran parallel from the new junction-point to Uruguayana (a distance of 7½ km.), but now, since the amalgamation, the section belonging to the former will no longer be required, trains being diverted on to the parent company's line at the junction in question.

INDIA

Financial Position of Indian Railways

The bare statement published in THE RAILWAY GAZETTE of March 23, to the effect that the working of Indian Railways is expected to result in a deficit of Rs. 7¾ crores in 1933-34 and about Rs. 5¼ crores in 1934-35 is likely to convey a misleading impression of the real financial position of the Indian railways. It is, therefore, desirable to explain that the railway budgets for the current year and the year to follow provide for the appropriation of Rs. 12½ crores to the depreciation account in addition to the amounts required for meeting not only all the normal expenditure on renewals and replacements debitable to that fund in these years, but the abnormal expenditure of 1½ crores in connection with the earthquake damages and repairs to the Hardinge Bridge protection works. If this extra appropriation were not made, the deficit of Rs. 13 crores in the two years would be almost wiped out. Taking the commercial railways alone, the estimate of net revenue from all sources for the two years 1933-34 and 1934-35 is Rs. 25¼ and 27¼ crores respectively. If payments to the depreciation reserve were confined to what was needed to meet the urgent and necessary requirements, the net revenue in each of these years would be over Rs. 32 crores and would exceed the sum required to cover the interest charges on commercial lines by a crore and a half. The position of the Indian railways is thus sound from a financial point of view.

Extended Use of Cast Iron Sleepers

Mr. P. R. Rau, Financial Commissioner of Railways, recently affirmed in the Assembly that the Railway Board had issued a circular requesting the railways not to enter into further commitments for wooden sleepers unless it could be shown that cast iron sleepers were unsuitable. The object was to utilise the pig iron that had been purchased. The price of wooden sleepers has fallen considerably within the last few months and now stands at about half the price obtaining in the years immediately following the war, when the use of steel and cast iron sleepers came to be extended. It is feared that a contraction of railway orders for wooden sleepers will cause much distress, as a vast army of agriculturists in certain areas find subsidiary occupation in timber extraction during the off season.

SPAIN

The Proposed Gibraltar Tunnel

The commission appointed to study the possibilities of a tunnel under the Straits of Gibraltar has issued its annual report for 1933. A full description is given of the work done by the coastguard ship *Zauen* in checking the soundings given in old hydrographic charts, and also of the borings carried out on each side of the strait, which have revealed the existence of something like 1,000 metres of impermeable strata under the zone which would be traversed by the tunnel. In view of the importance of this scheme strategically, and the value which it will acquire as a factor in possible diplomatic conversations in the future, a "Commission of Protection" has been formed under the presidency of the Prime Minister, Señor Lerroux, and with members representing the Spanish Foreign Office and Ministry of Communications. This Commission, as well as the Commission of Studies, will be under the guidance of the author of the project, Colonel Pedro Jevenois, as Secretary General. A full description of the scheme was published in the French Review *Génie Civil* and a translation of the article appeared in *The Engineer*, CXIX, 3866, 185-186,

London, 1930. A scheme devised for the Gibraltar tunnel by Ing. Ludwig Schuller, of Vienna, was also described and illustrated in THE RAILWAY GAZETTE of January 29, 1932. The general project is, of course, largely dependent on the future development of the French schemes for a Trans-Saharan Railway.

Central de Aragon Railway

The Central of Aragon Railway has announced its intention of increasing its capital by 30 million pesetas, which will be represented by 30,000 ordinary shares and 30,000 preference shares of a nominal value of 500 pesetas each. With this increase, the share capital of the Central of Aragon Railway will stand at Ptas. 50,000,000. This is one of the few Spanish railway companies that have been able continuously to pay a dividend on its ordinary shares without increasing tariffs and without any financial assistance from the State.

Amalgamations

It is now known definitely that the Ferrocarriles Secundarios and the Ferrocarril de Castilla are to be amalgamated, and a meeting of shareholders is announced for the purpose of deciding on the form the fusion is to take and the best manner of administration and working of the new company. At the same time, it is hoped to come to some arrangement in respect of the reorganisation and distribution of the share capital, and to settle certain matters pending with the debenture holders.

GERMANY

Opening out the Tunnel at Mainz

The German State Railway has just completed the opening out of a part of the 1,200 metre tunnel driven through the Kästrich hill at Mainz when the Central station was built in 1884, in which the conditions had become very bad of late years owing to increased traffic. The ventilation of the tunnel has always been a difficult problem, and the three air shafts originally provided soon proved to be quite inadequate. The line is on a sharp curve for part of the distance and on a rising gradient of 1 in 300 from the Central station. The smoke and exhaust fumes were causing damage to the brickwork and mortar, while the permanent way had to be renewed every three to four years, although its normal life with the traffic obtaining should have been about twelve years. In 1931 a scheme for a ventilating plant, to cost 600,000 marks, was prepared, but it was feared that this would not really solve the difficulty. As the tunnel passed partly under the parade ground of some disused barracks, which were to be pulled down under the Peace Treaty, it was decided to open out a length of 300 metres, and this has now been done, a special girder and platework lining being made to cover the track while the work was in hand. The ventilation of the remaining portions of the tunnel, at each end of the opened section, has been so much improved that the ventilating plant will not be required. It has been possible to put in extra signals, thus shortening the block sections and facilitating the traffic working. The signalling at the Central station has also been simplified. The cost of the work is given as two million marks, which will be balanced by the saving in maintenance and running charges.

ITALY

International Air Services Special Train

In consequence of the intervention of the Director of Civil Aviation the State Railways have decided to put a special night train in service, beginning April 12, from Rome to Brindisi. The train, which will leave Rome at 6 p.m., is timed to reach Brindisi, 373 miles, at 3.55 a.m. to enable passengers to leave by the air liners at 5 a.m. Special arrangements have been made with all foreign air companies to time their arrival at Rome so as to allow passengers to catch the new Rome-Brindisi night express, which will thus collect air passengers from England, France, Central and Northern Europe and convey them to Brindisi, whence Athens is reached on the same morning, Constantinople, Rhodes and Cairo in the afternoon. Air liners proceed from Cairo to India and Capetown in connection with the incoming ones. The institution of this night express makes possible the saving of a whole day as compared with the present timetable. The new train will be run five times a week as the air liners to Egypt and Turkey maintain a bi-weekly service and to Rhodes a weekly service.

An International Federation of Engineers

At the initiative of the National Fascist Syndicate of Engineers the representatives of European engineering associations recently met at Rome to discuss the formation of an international engineering body, the International Federation of Engineers-laureate, which will have its permanent headquarters in Rome. It proposes to confine its energies to the following channels: the solution of all technical problems affecting the economic life of each nation; the foundation of an international review to discuss all questions affecting the profession of engineers; the realisation of a clearly defined relationship with the International Labour Bureau at Geneva independent of the two great organisations represented at the Bureau; the establishment of a permanent relationship with the League of Nations in a consultative capacity; the promotion of a more intensive interchange of ideas and opinions amongst engineers of the various nations; the encouragement of technical initiative in the research and the wider utilisation of national resources. Sgr. Bufalo, President of the Sindacato Nazionale Fascista degli Ingegneri, was elected President of the new federation. The members present in Rome were received by Signor Mussolini.

The Littorina Railcar Accident

The collision between a local passenger train and a Littorina railcar on the Piombino-Campiglia line in Tuscany is the most serious accident which has occurred for many years on the Italian Railways. On the occasion of the carnival festivities at Piombino, 46 special and ordinary trains were run to cope with the crowds of passengers. It was the last train of the day which left Portovecchio at 21.30 that was scheduled to cross the Littorina which leaves Campiglia at 21.17 at Populonia. For reasons not so far elucidated the Littorina left Populonia without waiting for the arrival of the incoming train from Portovecchio. The collision occurred on a curve about 5 km. from Populonia, where the visibility is so limited that neither driver saw the other train until it was upon him. As the train was descending a steep gradient and the railcar climbing it, the impact was thereby increased and, due to the unfortunate bursting of its petrol tank, the railcar caught fire and was pushed backwards by the passenger train, which also became derailed. In all 16 passengers were killed, only three escaping from the burning car.

The Opening of the Direttissima

To celebrate the occasion of the inauguration of the Bologna-Florence Direttissima on April 21, a series of festivities will take place at Bologna. An exhibition in connection with the new line will be opened at Bologna on the day of inauguration; a special building has been erected to house it. Under the auspices of the Municipality of Bologna a commemoration of Zannoni and Protsche, who originated the scheme for the direct line many years ago, will be held in the town hall. A monumental fountain in memory of the 100 men who lost their lives during the construction of the tunnel will be unveiled in the station square.

BRITISH EAST AFRICA

The Nyasaland Railways Northern Extension

Work upon the construction of the northern extension of the Nyasaland Railways from Blantyre towards Lake Nyasa is now reported to have been so far completed as to make it possible to open for goods traffic the 160 miles of line up to Salima, or to within about 10 miles of the lake, by about the end of April. The remaining earthwork onwards to Domira Bay has been completed, but track will not be laid upon it before 1935, as, for reasons of economy, it is proposed to use permanent way released by the completion of the Zambesi bridge for the last 10 miles into Domira Bay. Meanwhile it is expected that the railway formation will be used to carry road traffic from the lake to railhead.

MORE ECONOMICAL LOCOMOTIVE WORKING

(*From a correspondent*)

THE abstracts of the locomotive running and the maintenance expenses of the average railway include the three largest items of single expenditure on revenue account, namely, wages of running staff, cost of fuel, and cost of maintenance. These may be taken as an indication both of the large proportion of revenue expenditure incurred by locomotive operation and of the necessity of extracting the last ounce of economical service from the available locomotive power if the cost, preferably based on the ton-mile usually considered the most accurate measure of efficiency, is to be kept to a minimum.

Unfortunately the best use is not always made of locomotive power because of the inadequate co-operation between the time-table compilers and those responsible for engine working. The former too often merely amend almost historical services, originally arranged without reference to the economical use of power and the latter have to fit in engine working as best they may to the services handed to them from the former, sometimes at the eleventh hour before the new time-tables come into effect. The result of this watertight compartment working can readily be seen, for example, by anyone interested enough to make a careful study of the locomotive working diagrams in connection with the passenger train services of any railways; the amount of time wasted at intermediate terminals and the number of engine-changings *en route* constitute an ample condemnation. Another, and possibly even greater, black mark against the organisation is to be found in the proportion of time in steam that the engine is engaged in actually working a train; it is doubtful whether this figure exceeds one-third, taking a general average through all passenger workings. There seem no reason, given proper co-ordination, why this proportion should not be improved to two-thirds or even higher, implying that the same amount of traction could be secured by, say, half the existing fleet of engines in steam.

The first principle of economic time-tabling appears to be, then, the amalgamation under one specially trained and experienced head of the entire time-tabling and locomotive diagramming staff, as their close co-operation can do so much for economy. It is perhaps a new suggestion that passenger time-tables should be framed to suit the economical working of engines, but it is claimed to be a very necessary one in these searching times and to be applicable without undue disturbance of the public convenience in travelling.

The system recently inaugurated by both of the northern groups of running their engines through between London and Glasgow or Edinburgh is an excellent example of what ought to be general practice; there is no time wasted at intermediate terminals and the engines have a minimum period of continuous use coupled to a maximum mileage per lighting up as well as per diem. This may be laid down as the second principle of good time-tabling and it is applicable to all services other than in those suburban areas which are subject to periodic rushes and are in consequence compelled to maintain an uneven service to cope with them. The time-tables of passenger services seem, like Topsy, to have "just growed"; the usual growth being that an original stopping train has been improved at some later date by overtaking it at some intermediate station with a new fast train which runs ahead of it thenceforward, the departure times being entirely casual and having no reference whatever to the close utilisation of locomotive power. Branch line services could be much improved by starting afresh and evolving a service utilising the branch engine and train more or less continuously after the manner of the competing motor omnibus; the cost of running these small trains is very little in excess of that of keeping them idle and fully manned with the engine in steam. While running they are at all events potential income-earners.

The third principle applies to freight service and is that train-time ought not to be wasted as it is at present by shunting out practically every wayside yard with the train-engine. As a good road engine is a bad shunting engine and vice versa, small and specially designed shunting engines should be used ahead of the freight trains to sort out the yards wherever possible, so that the road engines could attach the sorted wagons in one shunt instead of wasting time doing the work themselves; the same principle should be applied to the wagons detached. Owing to station-shunting *en route* freight trains have in some instances failed to average five miles an hour overall for fifty-mile runs. If the shunting at only the busier wayside, as distinct from the principal, stations had been performed apart from the train, its overall speed might have been trebled, giving a range of 150 instead of 50 miles for a turn of work by both engine and crew. The limit of daily shunting at a station at which it becomes advisable to use a special shunting engine in lieu of the train engines is easily ascertained. Small Sentinel or Diesel shunting engines can be operated at about one-quarter the cost of modern heavy road engines, and it thus seems advisable to utilise them at any station if the daily shunting there by the road engines averages more than two hours. Another method is to allocate an engine to two or three yards adjacent to each other, but whatever the method employed may be, there is need for an extended use of these most economical units, and the advantages will extend beyond reduction of locomotive costs to the expedition of delivery of goods.

(*See editorial comment on page* 621.)

ANTI-COAL BREAKER DEMONSTRATION AT HULL DOCKS.—On April 9, the L.N.E.R. demonstrated the use of a new Handcock anti-coal breaker of the most modern type at the Alexandra Dock, Hull. The demonstration was attended by the Under-Secretary for Mines, the local consuls of the principal European coal importing countries, representatives of the principal coal exporters and shippers in the North of England and the Lord Mayor and Sheriff of Kingston-upon-Hull. The railway company was represented by the Chief Mechanical Engineer, Goods Manager, and other officers concerned in the provision of facilities for the carriage and shipment of coal. After the demonstration, the visitors were entertained to luncheon at the Guildhall, Hull.

The Handcock anti-coal breaker demonstrated at Hull is similar in principle to the machines of this type first introduced by the L.N.E.R. over twenty years ago. The steel work or casing down which the coal is carried on the belt trays is 4 ft. 9 in. wide by 3 ft. from the belt face to the front, and the sides are pressed out at the back to form channels for carrying the belt guide rollers.

KEEPING ABREAST OF THE TIMES IN THE GOODS DEPARTMENT

By H. W. PAYNE.
Assistant to the Chief Goods Manager, G.W.R.

Part III

AN important aid to railway business is the ability to offer sites to business people intending to build factories or to settle upon land adjacent to the railway. It is a simple theory, but worthy of repetition, that if you put a trader upon your land you will get his traffic. Usually there is a contract with him to ensure this, with probably a private siding provided on favourable terms; a mutuality of interest as security of business. A register has been prepared which gives the geographical location of the site, and such details as water and lighting costs, local rates and any natural resources which this or that industry might desire to have available. Let but the first enquiry come and a representative visits the firm, offers his services and goes to the fullest possible extent in help and persuasion towards settlement in the way indicated.

Warehousing and Storage

And not only are new enterprises catered for, but the policy of the goods department has for many years been all in the direction of having warehouse and storage accommodation as part of the company's premises at the stations. For the same reason as in the case of the new arrival, you have your man on the spot, you offer him all the services he requires, and you carry his goods.

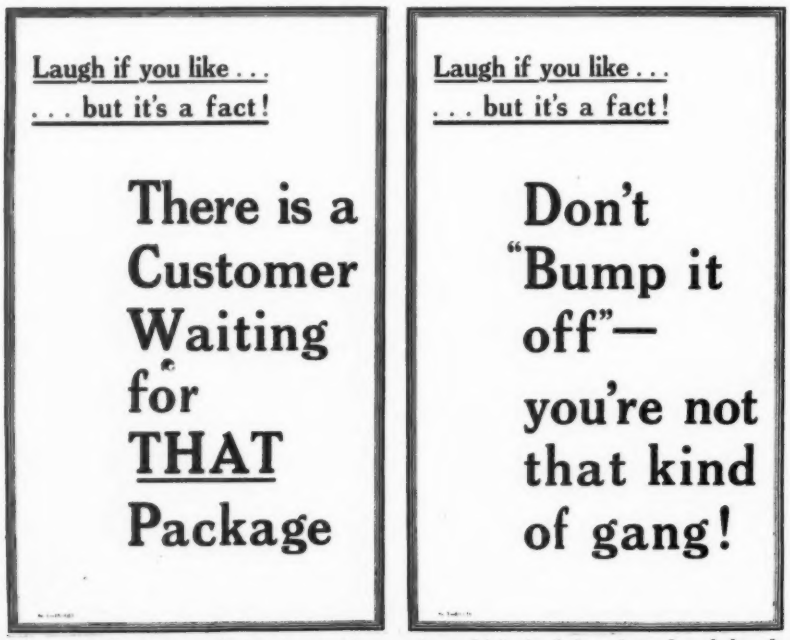
Canvassing and Development

Now that pooling arrangements are in force as between the various railways, a canvasser is becoming a co-ordinated man in order that he may devote his activities on behalf of the pooled companies to constant warfare with road competition. Traffic-getting is the spearhead of our struggle for existence. There is no royal road and no secret way of achieving the object, and the sources of information from all parts of the line must continuously be supplying both the local headquarters and the Paddington office with facts of commerce, the significance of which has to be explored by contacts of all descriptions in order that it may be found whether the remotest likelihood of advantage may be secured by examination and careful consideration. Information cannot be too extensive or exhaustive, and the term "every man a canvasser" has true significance in this respect.

The organised establishment of canvassing and development, which is daily acting upon knowledge, partly fact, partly hearsay, partly intelligent anticipation, with an admixture of the psychological, can be, and is, usefully supplemented by the efforts of railway employees in the role of volunteer canvassers and in the dissemination of knowledge of what the railway company can do. Furniture removal in particular still allows of an uneasy assumption that the majority of people are still unaware that the railways undertake such work.

Mechanical Station Appliances

Modernisation in station equipment is indicated by the adoption of new ideas with the machine. The mobile crane in sheds and yards comes to the goods instead of the goods being taken as at one time to the crane. The circulation of goods through the station by petrol driven trucks enhances the speed of handling at the big stations to a degree of expedition which makes them indispensable and their breakdown a serious hindrance. The gantry cranes of the yards are marvels of smooth working and unobtrusiveness compared with the old steam or hand operations, although these still have their uses, in the timber areas particularly. The mov-ing platform has been considered but not so far adopted, but the possibilities of the invention in favourable circumstances are in mind for further exploration.


Laugh if you like . . .
. . . but it's a fact!
There is a Customer Waiting for THAT Package
Laugh if you like . . .
. . . but it's a fact!
Don't "Bump it off"— you're not that kind of gang!

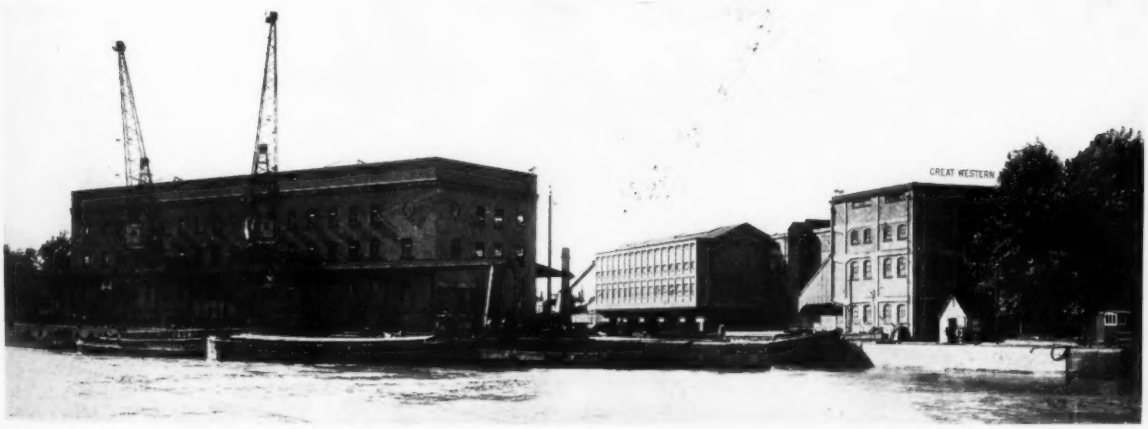
Two typical posters of the interesting series which is being introduced by the G.W.R. Goods Department in an endeavour to stimulate expeditious handling of traffic

The manual element is still the most important. Horses and carts still have their value for delivery services, but are gradually being superseded by motors. Where the motor lorry is not economical, a mechanical horse, the Cob tractor, pushes and pulls the "dead" vehicle, and is easily attached and detached upon its lawful occasions. But horses are not yet done with, especially for short journeys or the frequent stop and deliver itinerary.

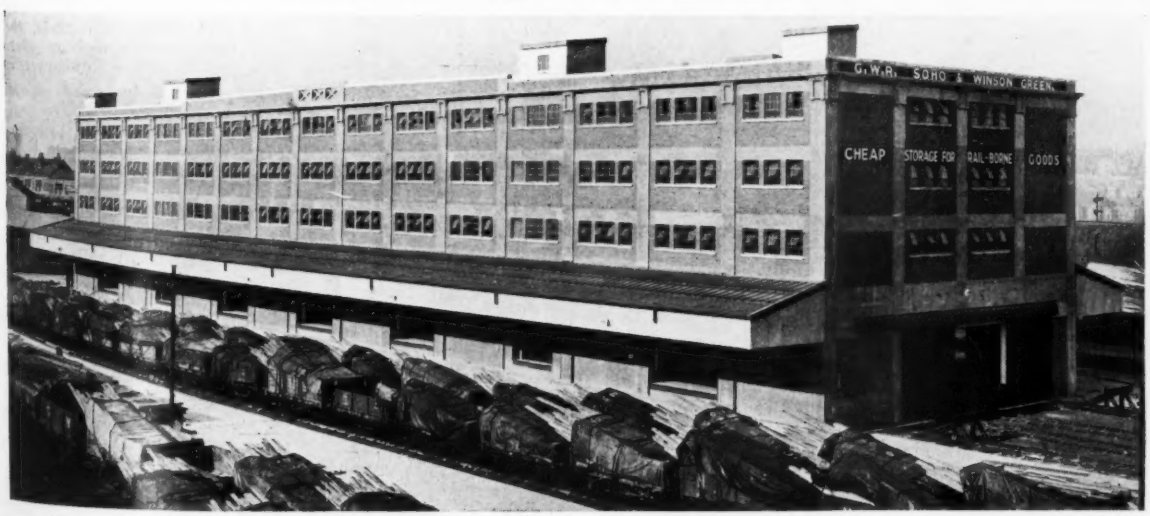
Mechanical Office Appliances

Indoors, mechanical appliances, electrically operated or otherwise, require but one hand to do the summation of enormous aggregations of figures day

Exterior of Paddington goods station



Riverside warehouses and electric cranes, Brentford Dock



New G.W.R. warehouse, Soho and Winson Green

by day at the big places, and a good deal of the drudgery of routine work is thus being avoided. Documents are standardised and prepared in type. Invoicing at the forwarding station goes simultaneously by the carbon process through the typewriter delivery sheets for the receiving station. So fine is the calculation of expense that the time occupied in placing and removing paper from the type machine is not overlooked, and continuous stationery requires but the completed document to be torn off to find another blank form ready for use. Thus efficiency is improved and office costs—a tremendous overhead—are reduced.

Pooling Arrangements

The new pooling arrangements between the Great Western, London Midland & Scottish and London & North Eastern Companies are, of course, financial in their conception. Account No. 10 of the published annual accounts is the foundation. Not that pooling generally is a novelty. In pre-war days there were pools of greater or less magnitude between the companies for particular lines of traffic or for specified areas. This latest enterprise has for its principal aim the complete abolition of competition between the parties to the pools, the revenue earned by each and all upon the basis years 1928, 1929, and 1930, being the financial basis. As from the date of the inauguration of the pools, January 1, 1933, subsequent revenues upon traffic between competitive stations is being divided upon the standard proportions ascertained for the basic years. Within this arrangement there are multifarious refinements and adjustments which are the peculiar care of the accountants.

The pools have made possible the abandonment, by agreement, of offices in towns or areas in favour of a one-company control, and where practical and convenient, a complete merger in one office of formerly separate activities. The outlines of policy are based upon the measure of confidence that the prestige of one company will not be injured by its withdrawal, interpreting the word prestige as that valuable quality of reputation earned by devotion to the best commercial relations with the trading community.

Amongst others, a significant understanding is that pooling arrangements shall not cause traffic to be diverted from one company's route to that of another during the preliminary experience of getting to realise the implications of the numerous adjustments essential to giving effect to the principles, except for one paramount reason, and that is the immediate practicability of improving transit services.

Accounting machines employed by the G.W.R. Goods Department at Bristol

The four following clauses of the scheme indicate the scope of the pool provisions now under deliberation:—

(*a*) In the matter of canvassing staff, including advertising and town offices.

(*b*) By combining streams of traffic over certain routes which were spread over two or more, and eliminating unnecessary train mileage.

(*c*) By combining terminal stations where the companies have competing terminals in one town and where it might be that one terminal, or a fewer number of terminals than at present, could handle the traffic.

(*d*) By avoiding duplicate expenditure.

A further three clauses indicate what are regarded as obligations assumed as collateral securities to the upheavals indicated in the other four:—

(1) Prior consultation with trading interests before withdrawal of important freight services or facilities.

(2) The general level of freight services would be raised and that, taken as a whole, the services and facilities after pooling would be improved.

(3) Safeguards in regard to staff rendered redundant by incidence of pooling arrangements.

Traders' Season Tickets

The Department has in its hands for sound commercial reasons the issue of traders' season tickets and bulk travel vouchers, which concede reduced terms to railway customers whose journeys are made upon their legitimate business. The qualifications are an estimated annual value of £300 of carriage charges paid to the companies—to each or to all by inter-company arrangement—this latter another instance of accommodation rendered possible by closer contact between the railway companies.

From the foregoing notes upon the widely varying activities of the Goods Department of a great railway, it will be obvious that no stone is left unturned to keep abreast of the times in every detail connected with the working of that department.

RAILWAYS AND ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

Railway Shareholdings in Road Transport

FROM the annual reports of the four main-line railways for the year ended December 31, 1933, it appears that the sums invested in associated omnibus undertakings are:—

	£ s. d.
L.M.S.R.	2,910,777 16 9
L.N.E.R.	2,386,757 17 10
G.W.R.	2,163,025 7 0
S.R.	1,813,635 18 6

In the first three cases these amounts may not agree with the totals of the holdings shown in the accompanying table but they are the amounts of the subscriptions. There have been relatively few changes during the year, the chief one being the absorption of the G.W.R. associate Western Transport Co. Ltd., by Crosville Motor Services Limited, with which the G.W.R. is therefore now associated as well as the L.M.S.R. This operation was noted as being in progress in our review of the position, published a year ago. The G.W.R. formerly held £76,916 ordinary shares in the Western Transport Co. Ltd., and it now holds £76,965 ordinary shares in the Crosville concern. The holding of the G.W.R. in the Western National Omnibus Co. Ltd. has been reduced by £100,000 of 6 per cent. cumulative preference shares. The G.W.R. holding of ordinary shares in the Birmingham and Midland Motor Omnibus Co. Ltd. is shown as £200,000 instead of the former figure of £160,000, and the L.M.S.R. holding in the same company as £300,000 instead of £240,000. The only other alteration noted in the L.M.S.R. list is an increase by 153 in the holding of ordinary shares in the Scottish Motor Traction Co. Ltd. The L.N.E.R. report discloses that the holding of that company in the S.M.T. was also increased, by 150 ordinary shares. Other L.N.E.R. changes are, an increase of 19,970 ordinary shares in East Yorkshire Motor Services Limited; and the investment in the United Automobile Services Limited has been added to by

	Issued Share Capital	L.N.E.R.		L.M.S.		G.W.R.		S.R.
		Holding	Earnings	Holding	Earnings	Holding	Earnings	Holding
		£	£ s. d.	£	£ s. d.	£	£ s. d.	£
Aldershot & District Traction Co. Ltd.	200,000 Ord.	—	—	—	—	—	—	*
W. Alexander & Sons Ltd.	200,000 Ord.	50,000	25,000 0 0	50,000	25,000 0 0	—	—	—
	700,000 6% Part. Pref.	175,000	—	175,000	—	—	—	—
Birmingham & Midland Motor Omnibus Co. Ltd.	1,000,000 Ord.	—	—	300,000	36,000 0 0	200,000	24,000 0 0	—
	100,000 8% Cum. Pref.	—	—	—	—	—	—	—
City of Oxford Motor Services Limited	141,750 Ord.	—	—	—	—	70,875	11,855 0 0	—
	70 000 6½% Cum. Pref.	—	—	—	—	37,000	—	—
Crosville Motor Services Limited	955,000 Ord.	—	—	400,000	24,000 0 0	76,965	1,539 6 0	—
Cumberland Motor Services Limited	125,000 Ord.	—	—	41,666	4,166 12 0	—	—	—
Devon General Omnibus & Touring Co. Ltd.	120,000 Ord.	—	—	—	—	36,000	4,800 0 0	*
	150,000 7% Cum. Pref.	—	—	—	—	—	—	*
Eastern Counties Omnibus Co. Ltd.	672,069 Ord.	163,243	8,156 5 6	22,419	1,120 19 0	—	—	—
	200,000 5% Cum. Red. Pref.	—	—	—	—	—	—	—
Eastern National Omnibus Co. Ltd.	250,000 Ord.	62,500	13,374 10 0	62,500	13,375 0 0	—	—	—
	350,000 6% Cum. Pref.	112,500	—	112,500	—	—	—	—
East Kent Road Car Co. Ltd.	350,000 Ord.	—	—	—	—	—	—	*
	200,000 6½% Cum. Pref.	—	—	—	—	—	—	*
East Midland Motor Services Limited	100,000 Ord.	33,333	3,333 6 0	16,667	1,666 14 0	—	—	—
East Yorkshire Motor Services Limited	200,000 Ord.	99,575	6,943 10 4	—	—	—	—	—
Hants & Dorset Motor Services Limited	200,000 Ord.	—	—	—	—	—	—	*
	150,000 6½% Cum. Pref.	—	—	—	—	—	—	*
Hebble Motor Services Limited	100,000 Ord.	12,500	750 0 0	37,500	2,250 0 0	—	—	—
Highland Transport Co. Ltd.	35,000 Ord.	—	—	17,500	525 0 0	—	—	—
Lincolnshire Road Car Co. Ltd.	100,000 Ord.	31,707	3,170 14 0	7,927	792 14 0	—	—	—
Maidstone & District Motor Services Limited	300,000 Ord.	—	—	—	—	—	—	*
	200,000 6½% Cum. Pref.	—	—	—	—	—	—	*
Northern General Transport Co. Ltd.	554,053 Ord.	243,815	22,785 4 3	—	—	—	—	—
	300,000 6½% Cum. Pref.	13,157	—	—	—	—	—	—
North Western Road Car Co. Ltd.	600,000 Ord.	74,666	9,333 5 0	149,332	18,666 10 0	—	—	—
Ribble Motor Services Limited	600,000 Ord.	—	—	264,082	26,408 4 0	—	—	—
	200,000 6½% Cum. Pref.	—	—	—	—	—	—	—
Scottish Motor Traction Co. Ltd.	746,078 Ord.	186,673	25,609 13 8	186,672	25,609 15 3	—	—	—
	1,000,000 6½% Cum. Pref.	106,862	—	106,863	—	—	—	—
Southdown Motor Services Limited	426,250 Ord.	—	—	—	—	—	—	*
Southern National Omnibus Co. Ltd.	350,000 Ord.	—	—	—	—	—	—	*
	96,500 6% Cum. Pref.	—	—	—	—	—	—	*
Southern Vectis Omnibus Co. Ltd.	55,000 Ord.	—	—	—	—	—	—	*
	15,200 6% Cum. Pref.	—	—	—	—	—	—	*
Thames Valley Traction Co. Ltd.	150,000 Ord.	—	—	—	—	51,115	2,555 15 0	*
Trent Motor Traction Co. Ltd.	268,000 Ord.	36,845	3,684 10 0	73,689	7,368 18 1	—	—	—
United Automobile Services Limited	700,000 Ord.	342,626	26,548 3 9	—	—	—	—	—
	150,000 7% Cum. Pref.	36,955	—	—	—	—	—	—
Western National Omnibus Co. Ltd.	567,152 Ord.	—	—	—	—	283,576	20,900 16 1	—
	1,228,980 6% Cum. Pref.	—	—	—	—	943,387	—	—
Western Welsh Omnibus Co. Ltd.	290,000 Ord.	—	—	—	—	145,000	3,625 0 0	—
West Yorkshire Road Car Co. Ltd.	300,000 Ord.	74,605	7,460 10 0	74,607	7,460 14 0	—	—	—
	200,000 6½% Cum. Pref.	—	—	—	—	—	—	—
Wilts & Dorset Motor Services Limited	60,000 Ord.	—	—	—	—	—	—	*
Yorkshire Traction Co. Ltd.	150,000 Ord.	36,780	4,004 5 4	36,779	4,004 4 10	—	—	—
	24,350 7% Pref.	4,661	—	4,662	—	—	—	—
Yorkshire (Woollen District) Electric Tramways Limited	220,000 Ord.	36,667	3,666 14 0	73,333	7,333 6 0	—	—	—

* The Southern Railway investments in road transport undertakings are not charged to capital account and so do not appear in detail in the annual accounts. In most cases the Southern Railway holds approximately 30 per cent. of the issued share capital, but the holding is about 50 per cent. in the case of the Southern National and Southern Vectis, and about 20 per cent. in the case of the Devon General, where the G.W.R. holds about 30 per cent.

36 cumulative preference shares and 361 ordinary shares. It will be noted that we have included in our table this year the amounts received by the various companies on their investments where they are disclosed in the reports.

Incidentally, it may be noted that in the L.N.E.R. review of the year's work reference is made to the services of associated bus companies and it is added that their provision has enabled large savings of expenditure to be effected by the closing of branch lines either wholly or for passenger traffic and the withdrawal of services previously run by the company's own buses which operated at a loss. These savings amounted to no less than £90,175 in the course of the year.

In addition to the omnibus concerns some of the companies have considerable investments in cartage undertakings. Thus the L.M.S.R. has subscribed £71,761 to Joseph Nall & Co. Ltd., the holding being 10,000 5 per cent. £1 cumulative preference shares and 35,106 £1 B ordinary shares. There is, too, an investment of £100,000 in £1 B ordinary shares in Wordie & Co. Ltd., which are now fully paid up. Dividends received during last year included £500 from Joseph Nall & Co. Ltd. and £2,522 17s. 6d. from Wordie & Co. Ltd. Similarly in the L.N.E.R. report there is the investment of £84,808 4s. 1d. in Currie & Co. (Newcastle) Ltd., representing £63,750 ordinary shares, and the dividends received during the year included £3,825 on this account, a reduction of £319 on the previous year's return.

There is also, of course, the controlling interest in the businesses of Carter Paterson & Co. Ltd., and Hay's Wharf Cartage Co. Ltd. (including Pickfords Limited), in which all the four main line railway companies are jointly concerned. It is mentioned in all the reports, and in the Chairman's speech at the Southern Railway meeting and also in the L.N.E.R. review of the year the figure of £545,000 was given as the cost of each company's share in the business. That figure is shown in the Southern Railway report as estimated expenditure during this year under the heading of subscription to road transport undertakings. Under a similar heading in the L.N.E.R. accounts there is an entry of £546,000; the L.M.S. give £595,000 and the G.W.R. £475,000.

Inspection of Goods Vehicles

Announcement has been made that the Minister of Transport proposes to introduce, on May 1, the system of inspection of goods vehicles authorised by the Road and Rail Traffic Act, 1933. It will be recalled that under Section 17 of that Act certifying officers and examiners appointed by the Minister may inspect any goods vehicle and, if it appears unfit for service, they may prohibit its use on the road for the carriage of goods until defects have been remedied. It is again made clear that certifying officers and examiners are not empowered to stop a vehicle in motion on the road, but they may at any reasonable time enter premises on which they have reason to believe that a goods vehicle is kept.

New Licences for Goods Drivers

In the course of his speech, opening the debate on the second reading in the Commons on Tuesday on the Road Traffic Bill, the Minister of Transport said that drivers of heavy vehicles had a special responsibility owing to the difficulties and dangers of the vehicle they were driving and the special licence they would have to obtain from the Traffic Commissioner would enable them to drive particular vehicles. This provision would place the driver of a heavy goods vehicle in a similar position to that of the driver of a public service vehicle. Drivers would be tested on the types of vehicle which they wished to be authorised to drive.

Crossings for Pedestrians

In the debate the Minister of Transport laid great stress on his hopes for the success of the crossing places for pedestrians. He has lost no time in completing arrangements with various local authorities in the Metropolis for a considerable number of them. Those in the West End are only at junctions controlled either by policemen or traffic signals but on main roads in the East End a number have been arranged at places which are not controlled in any way. These crossings will be indicated by a succession of channel shaped marks, in white paint, between parallel lines across the road, and where there is no other control a circular sign, with a white C on a blue ground in a red circle, will be temporarily erected.

A couple of the 30–35 cwt. Albion lorries at work. These are representative of the fleet of over 80 of this type of vehicle in the service of the L.N.E.R.

The Latil K.T.L. Traulier

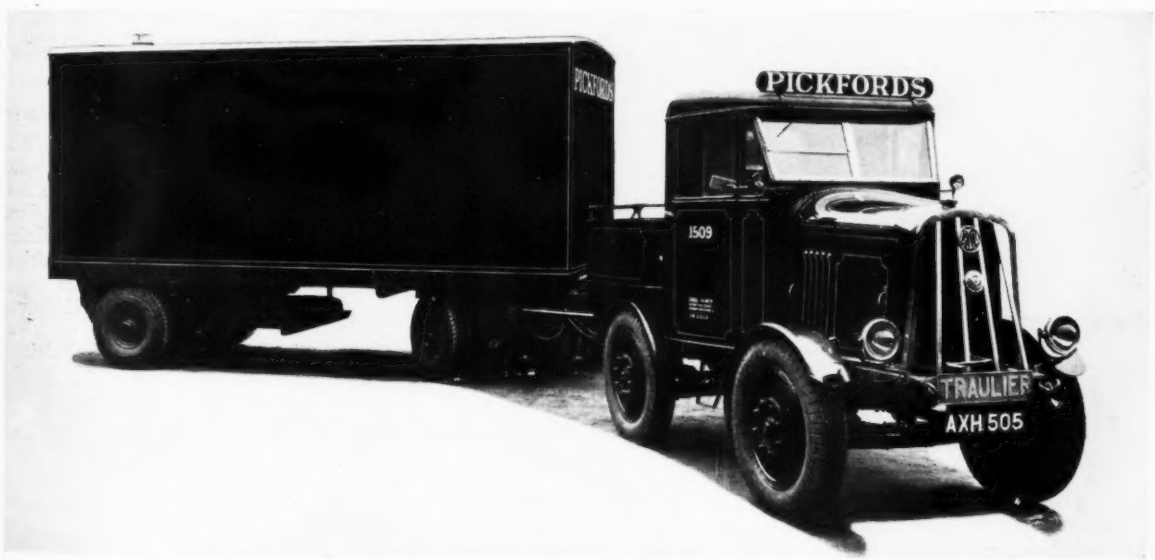
A four-wheel drive unit designed for heavy-duty work and embodying the experience and study of economic haulage and complying with the latest legal requirements in Great Britain

FROM the illustrations which are given on this and the following pages it will be readily seen that the latest Latil vehicle has been aptly named, for it has been designed mainly for haulage work but with a certain load-carrying capacity so that it is something more than a tractor. Its versatility is all the greater because of the fact that the drive is transmitted to all four wheels, while there is the still further advantage that all the wheels steer, permitting the vehicle to turn in a remarkably small circle.

It will easily haul the maximum aggregate load allowed by the existing law on any vehicle or combination on the roads of this country at the present time. An illustration of such combination is seen in the Pickford outfit where these are operated in the usual way by a lever. In another compartment there is a supplementary gear, brought into operation by a second lever, and this enables the whole range of gears to be lowered, so that in practice the vehicle has six forward speeds as well as two reverse gears.

By moving the second lever into a third position the power is taken to an auxiliary shaft for the operation of a capstan, pulley or other mechanism, and for that purpose four speeds can be obtained by the operation of the first lever. The lubrication of the gearbox is maintained by a pump delivering oil to a trough in which rotates a worm throwing the oil over the moving parts.

From the main gear shaft, the power is transmitted by



A Latil Traulier with an eight-wheeled, four-axle trailer capable of carrying a useful load of 15½ tons, including one ton on the Traulier itself

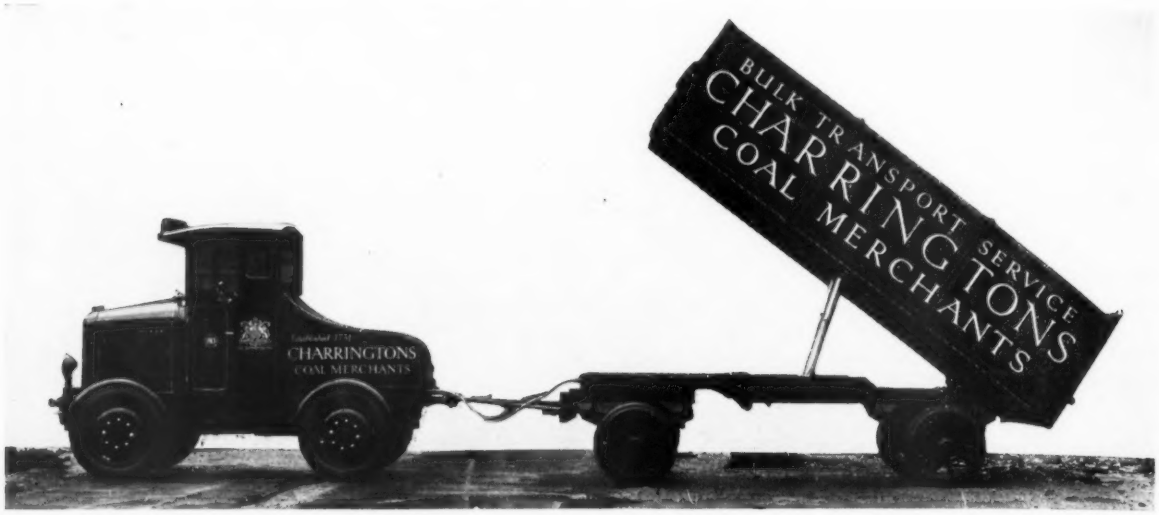
the Latil Traulier weighs 2 tons 10 cwt. and carries a useful load of 1 ton; the 8-wheeled trailer weighs 4 tons and will carry a useful load of 14 tons 10 cwt., so that with a useful load of 15 tons 10 cwt. there is a total weight of 22 tons.

Some of our illustrations bring out the compact arrangement of the Traulier. It is driven by a 23-50 h.p. four cylinder petrol engine which is governed to run at not more than 2,000 revs. per min. It is of straightforward design with side valves, having adjustable roller type tappets behind detachable cover plates. There is a single dry plate clutch and the gearbox is bolted to the engine casing to form one unit and facilitate a three point suspension, with rubber pads and springs, in the chassis frame.

In view of the heavy duty which is likely to be placed on the unit the question of the gearbox is of vital importance. The Latil gearbox is a double box, one compartment containing three forward speeds and a reverse, and cardan shafts to the differentials on the front and back axles, and universally mounted driving shafts transmit it to all four wheels through internally toothed gears in oil-tight casings. Both differentials can be locked simultaneously by the movement of a lever by the driver's seat.

In the design of the springs regard has been given to the heavy work to which the Traulier will be subjected, and that is also reflected in the strength of the main frame of pressed steel rigidly braced by four riveted cross-members. Disc type wheels are fitted and the tyres are selected according to the type of work upon which the vehicle will be chiefly engaged. The handiness of the Traulier is most marked, and the steering, on all four wheels, is quite light, while it is a simple matter to make any adjustments that might become necessary in the course of time.

As to brakes, the pedal works one, of the internal expanding type, on the transmission, while the hand lever operates external contracting shoes on all four wheels.



A Latil K.T.L. Traulier hitched up to an end-tipping trailer for bulk coal traffic, the hydraulically-operated tipping gear of which is worked from the power take-off on the Traulier

Here again, as in all the mechanism of the Traulier, adjustment is a simple matter.

The fact that the drive is to all four wheels gives the vehicle remarkable adhesion under difficult conditions, but it may be pointed out that where there is work to be done across country or over soft or unmade roads, wheels can be fitted which have folding adhesion plates to go over the tread of the tyre when traversing the soft ground and are thrown back out of the way when running on the hard road. Vehicles so equipped have been giving very good service in the cartage of beet as well as in forestry work, although a special set of all-steel wheels is available for that class of work.

Mention has been made of the excellent work done in hauling beet, and it may be added that the Traulier has been very successful in forestry work, as its handiness enables it to get into the most favourable position to haul the butt from the spot where it is felled, to the mill where it is to be cut up.

Reverting to the mechanical details it may be pointed out that the cooling of the engine is effected by a water circulating pump of the centrifugal type, a large capacity detachable shell type radiator, and a belt-driven fan of ample dimensions mounted on ball bearings. Belt adjustment is provided for by an eccentric mounting. Lubrication of the engine is effected by a submerged gear-driven pump to the main bearings and thence by the drilled crankshaft to the connecting rod bearings and by ducts to the countershaft bearings. Other moving parts are lubricated by splash, and oil pressure is indicated by a gauge on the dash in view of the driver and the surplus oil is by-passed to the timing gear case.

A heavy load. A Latil Traulier hauling a boiler weighing 30 tons on a gradient of 1 in 16 over Southall Bridge, en route from the G.W.R. siding to Ticklers' jam factory

A Six-Wheeler for Railway Use

A description of the articulated combination vehicle comprising a Thornycroft Bulldog chassis coupled up to a Dragon semi-trailer, with retractable fore carriage, enabling the tractor to be withdrawn

AMONG interesting vehicles recently added to the extensive fleet of the London & North Eastern Railway are three in which the Thornycroft Bulldog chassis is used in combination with a Dragon semi-trailer to form a vehicle to carry a paying load of six tons.

The Thornycroft Bulldog chassis, known as the CE/GD4 type, is designed to carry in the normal way a load of 2½ tons and it is made with wheelbase of 12 and 14 ft. respectively for that purpose. The three units to which reference is now made have the wheelbase shortened to 11 ft. so as to prevent an excessive space between the back of the driver's cab and the front of the trailer body. Otherwise the specification is on the normal lines.

The four cylinder engine is of 3,620 c.c. rating, mounted at three points in the chassis on rubber insulated supporting brackets so that any frame distortion is not communicated to the unit, while the torque reaction of the engine is cushioned before reaching the frame. The cylinders are cast in a single block and fitted with dry liners, the head being easily detachable for decarbonising and valve grinding. Valves are arranged in the head and driven by push rods from a single camshaft and the mechanism has been designed to facilitate easy inspection and adjustment.

There is a large single plate dry clutch, and the gearbox, providing four forward speeds, the top one being a direct drive, is made to form one unit with the engine. It will be noted from our illustrations that the driver is seated behind the engine and so the gear lever is mounted directly on the box. A hollow propeller shaft with enclosed metallic universal couplings transmits the drive to the overhead worm gear in the back axle, which consists of a cast steel casting with two semi-floating differential shafts. Lubrication is by grease and oil guns, the nipples being arranged in accessible positions, and in fact the whole chassis has been thought out with a view to making the maintenance work as easy as possible.

Steering is of the worm and wheel type, with taper roller bearings and a complete worm wheel so that a fresh sector can be brought into use should backlash develop through excessive wear. Brakes of the internal expanding type are fitted to all four wheels and foot operation of those in the 16 in. drums in the front and back wheels is assisted by a vacuum servo. All the brake gear is easily adjustable and the facings are large fabric pads, ensuring long life with a minimum of adjustment. Twin tyres are fitted on the back axle.

One of the Bulldog and Dragon combinations which have recently been supplied to the L.N.E.R. The tractor may be withdrawn, leaving the trailer standing by itself on the wheels, which are brought into position when required

The Dragon semi-trailer is, of course, the product of the Truck and Tractor Appliance Co. (Manchester) Ltd., and one of the features of the design is that only one-third of the total load is imposed on the rear axle of the tractor, where it is sufficient to create tractive effort to haul the remaining two-thirds on the trailer axle. Another characteristic point in the Dragon design is the mounting of the rear axle in twin springs, one above and one below. It is claimed for this arrangement that it gives smoother running and stability than a single spring, and the difference between the laden and unladen height is half that of the single spring.

These Dragon semi-trailers have the retractable undercarriage at the front. This is a specially designed fitting which is brought into action by a detachable crank working in conjunction with a quick-threaded screw. At its lower end there are two small wheels which support the

The three Bulldog-Dragon articulated vehicles now in the service of the L.N.E.R. It will be observed that only one of the Bulldog tractors is in position, the other Dragon semi-trailers resting on their retractable wheels

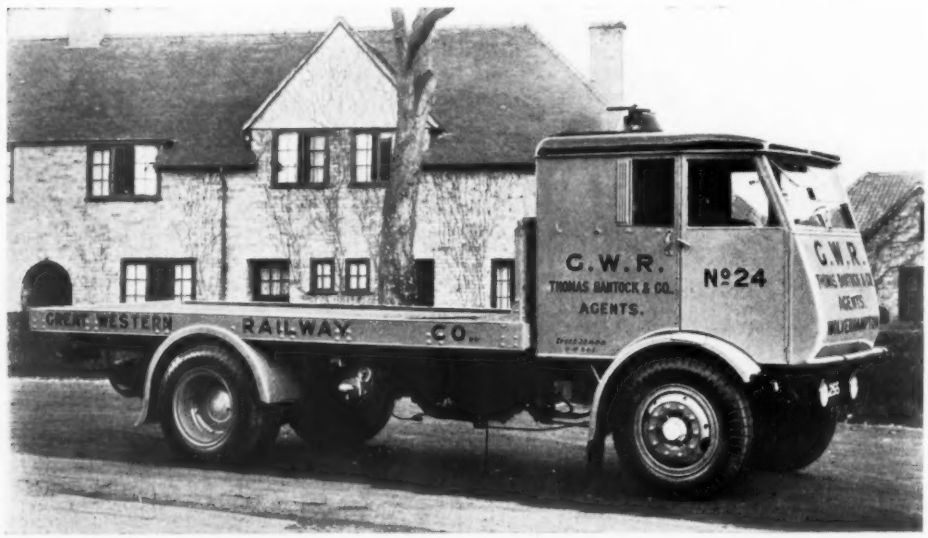
vehicle when the tractor is withdrawn and as they are steerable by means of the tiller bar the empty trailer may be man-handled into position.

The pick-up is automatic and the wide entrance which has been given to the hitching plate, mounted on the tractor, enables it to collect the king-pin from almost any angle. The hitch normally rests at an angle which enables any variation in ground level to be compensated for. As soon as the hitch strikes the trailer plate it takes an horizontal plane and the king-pin being accepted by the lock, completes the movement. The hardened steel jaws confining the king-pin have an easy push entrance from the outside but once the king-pin is in position the lock is positive for a pull, as each jaw bears against the other as well as against the main section of the hitch. Each Dragon trailer is equipped with servo-operated brakes and a valve is provided to enable them to be coupled or uncoupled in a simple movement.

The framework is made of rolled steel, the supplementary frame being supported by steel outrigger brackets riveted to the main frame and extending to the full width. It is bound with steel angle and light cross channels to take ties for the hardwood flooring. The turntable between the truck and the trailer is swung on trunnions so that the outfit can weave without throwing strain on either frame. The entire turntable is protected from shock by means of coils springs, front and rear and giving an easy take-up from standing start.

Detachable steel disc wheels with cast steel hubs on oversize British Timken bearings, inner and outer, are fitted, and they carry twin tyres, which may be either of the low or high pressure type.

LEYLAND DATA SHEETS.—The new Leyland data sheet No. 33, current from April 1, 1934, gives particulars of all the heavier Leyland models with the exception of fire engines and trolley buses; details may be obtained on request to Leyland Motors Limited, Leyland, Lancs. Some 12 goods and passenger models are featured, all of which are available with alternative petrol or oil engines. The introduction of two new Badger models is of interest, these being the TA6, a normal-control model with a payload capacity of 5 tons, and a similar capacity model, the TSA3, which has forward control. The Cub data sheet No. 3 has been current since March 1, 1934, and gives all details of the range of 16 goods, passenger and refuse-collecting models, many of which are available with alternative oil engines. Four- and six-cylinder models, tippers and six-wheelers are included.



MODERN STEAM ROAD TRANSPORT

A Sentinel steam lorry, of the latest SA type, which is operated in the Wolverhampton area by Thomas Bantock & Co., the local agents for the Great Western Railway. A similar vehicle with drop-sided body is in the service of Tuff & Hoar, Ltd., Wharfingers and L.M.S. agents at Woolwich

A NEW PHASE METER FOR TWO-ELEMENT TRACK RELAYS

A COMPACT testing set embodying a three-range rectifier type voltmeter and a small transformer unit for measuring the phase-angle of two-element a.c. track circuit relays has recently been put on the market by the Westinghouse Brake & Saxby Signal Co. Ltd. The principle of the phase meter is shown in Fig. 1, in which a small potential transformer is used to step-down the relay "local" voltage to a value comparable with that on the track element. The phase-angle between

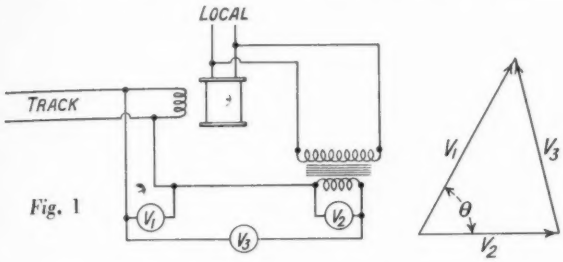


Fig. 1

these voltages is found by taking the three voltage measurements V_1, V_2 and V_3 and constructing the vector triangle for these values.

Fig. 2 shows the complete testing set. The transformer unit, fitted with flexible voltmeter leads, and terminals for connection to the two relay windings, has in addition a three-way tapping switch for connecting the voltmeter in turn to give the voltage readings V_1, V_2, V_3. Included also in the testing set is a phase calculator for setting out rapidly the vector triangle representing the three voltage readings; it consists of three pivoted and calibrated links, the lengths of which can be varied independently to represent the voltage readings obtained, and a scale calibrated from 0 deg. to 90 deg. which gives immediately the phase angle of the relay tested.

A disadvantage of the normal type of phase meter, when applied to track circuit relays, is that the disturbance produced in the circuit by the relatively large current taken by the instrument leads to results which do not

Fig. 2

represent the true normal circuit conditions. This error is negligible with the testing set described, since the total current taken from the track circuit will not exceed 1 m/a.

The a.c. rectifier voltmeter is primarily intended as a portable instrument for railway signal circuits, and for this reason it has been kept as a separate unit from the transformer for phase measurement. The three voltage ranges of this instrument are 0-6-30-150 volts and the resistance of each range is 1,000 ohms/volt. The standard transformer unit is designed for use with relay "local" voltages up to 110-v. and frequencies $33\frac{1}{3}$ to 75 cycles. The weight of the complete testing set, as illustrated, is just under $4\frac{1}{2}$ lb.

A Crucible Steel Furnace in Egypt

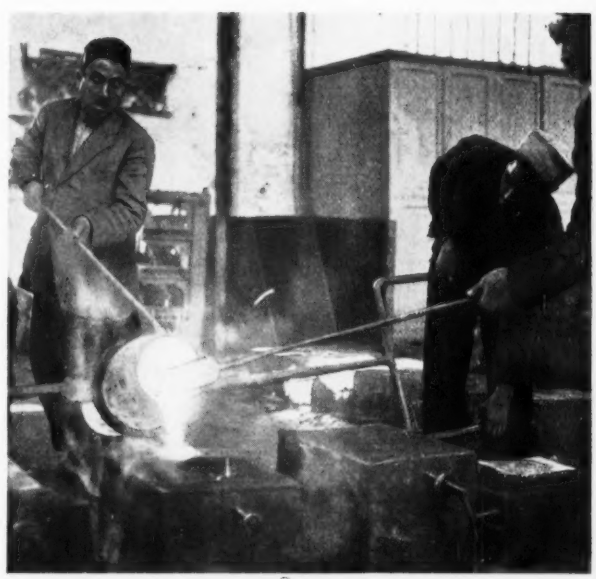
A SMALL lift-out type crucible steel melting furnace was recently installed at the Bulak works of the Egyptian State Railways and is of particular interest in that no steel casting has ever before been produced on the E.S.R. The furnace was supplied by the Morgan Crucible Steel Co. Ltd., and has a capacity of 320 lb. of steel at one heat, contained in four crucibles of 80 lb. capacity each.

The primary use to which this furnace has been put is in the casting of small details, such as axlebox keeps, body brackets for coaches, &c., as it has not been felt that at such an early stage in the production of steel castings in Egypt it is advisable to attempt the casting of parts subject to more stress.

Although the furnace has been in use for less than two months and is being operated by native, and so far untrained, staff, many excellent castings have been obtained. The degree of elasticity of the castings produced has not so far been up to the standard obtained in Europe, but as the only castings at present are of a comparatively unstressed type, this is not considered a disadvantage.

The furnace is fired by the best type of colliery coke under forced draught provided by an electrically driven fan and the pads are fed with punchings from mild steel boiler plates and similar material. The accompanying photograph shows the method of pouring and the type of labour employed.

The average cost of steel castings imported into Egypt amount to £27 per ton and the average price obtainable from the sale of mild steel scrap is £1 16s. per ton, so that any economy that would ensue from locally produced castings is well worth investigation.



Left: The new cocktail bar has been effectively designed on modern lines

(See paragraph on page 650)

Below: The attractive new lounge, 84 ft. long, is finished in colours graded from light orange to cream. The upholstery is in green

NEW COCKTAIL BAR AND LOUNGE AT PADDINGTON STATION HOTEL, G.W.R.

RAILWAY NEWS SECTION

PERSONAL

L.M.S. APPOINTMENTS

The following appointments have been approved by the Directors:—

Chief Civil Engineer's Department

Mr. H. B. Everard, Assistant to District Engineer, Derby South, to be District Engineer, Derby South.

Mr. I. R. Frazer, Senior Assistant, Irvine, to be Assistant to District Engineer, Derby South.

Chief Operating Manager's Department

Mr. G. H. Nelson, District Locomotive Superintendent, Bletchley, to be District Locomotive Superintendent, Patricroft.

Mr. T. Follows, District Locomotive Superintendent, Swansea, to take over the former Abergavenny District.

Mr. A. Allatt, Stationmaster and Goods Agent, Kirkham and Wesham, to be Yard Master and Goods Agent, Grimethorpe (Dearne Valley Line).

Chief Commercial and Chief Operating Managers' Departments

Mr. B. S. Bamforth, Chief Staff Clerk (Staff Superintendent's Office), Manchester, to be Assistant (Staff Superintendent's Office), Manchester.

Scottish Change

Mr. C. MacGregor, Assistant in Land, Mining and Parliamentary Work, Divisional Engineer's Office, Glasgow, to be Chief Assistant to Divisional Engineer, Glasgow.

L.N.E.R. APPOINTMENT

The London & North Eastern Railway Company announces that the following appointment has been made:—

Mr. J. Bryson, Goods Agent, Newcastle Forth, to be Goods Agent, Bishopsgate, in succession to Mr. W. G. Sprague, who will retire from the service on April 21 next.

From the *London Gazette*:—Engineer and Railway Staff Corps.—S. H. Fisher to be Major (April 14). Mr. Fisher is Operating Superintendent, L.M.S.R.

Mr. Thomas Craven, J.P., D.L., late senior partner in Gresham & Craven Limited, left estate valued at £794,875 (£773,250 net). He left £4,000 to various hospitals.

Dr. G. Ricardo, Junior, a Director of the Sorocabana Railway, has taken up an important appointment in the Ministry of Communications and Public Works, his place being filled provisionally by Dr. L. Orsini, the Traffic Manager of the railway.

We regret to record the death on April 7 of Sir Frederick Palmer, K.C.M.G., C.I.E., M.Inst.C.E., &c., senior partner of Messrs. Rendel, Palmer & Tritton, Consulting Engineers, Westminster. Born in 1862 and educated at Neath, he became an articled pupil on the Great Western Railway and subsequently an Assistant Engineer. After a short time, however, he went out to India in a similar capacity on the East Indian Railway, remaining there for some 18 years. He was promoted to be District Engineer in 1894. Two years later he was placed in charge of the construction of the Moghalsarai-Gya Railway, which included the Upper Sone bridge, consisting of 93 spans of 100 ft., or approximately 10,000 ft. in overall length, the longest in India. In 1901 he was appointed Chief Engineer to the Calcutta Port Commissioners, a position he held for eight years until he returned to England as Chief Engineer to the Port of London Authority. He received the honour of C.I.E. in 1907. It was in 1913 that Mr. Palmer resigned the Port of London appointment to accept a partnership in the firm of Rendell & Tritton, Consulting Engineers, this becoming Rendel, Palmer & Tritton. During the war he worked first in the Ministry of Munitions and then as chairman of a committee upon working economies on British railways, and Consulting Engineer to the Air Ministry. In 1925 he was appointed Consulting Engineer to the Port of London Authority for extensive works at Tilbury and West India Docks, and two years later proceeded to Canada to report upon the Hudson Bay route for the Canadian Government. In 1929 Mr. Palmer was selected by the L.C.C. to supervise the Charing Cross bridge scheme and in 1930 he was decorated with the K.C.M.G., his firm being Consulting Engineers to the Crown Agents for the Colonies as well as for the Secretary of State and High Commissioner for India, which includes the Indian State Railways, the Hooghli bridge and other works. His firm was also appointed for the reconditioning of Waterloo bridge. He served as President of the Institution of Civil Engineers in 1926-27 and was a Member of the American Society of Civil Engineers and Colonel in the Engineer and Railway Staff Corps. The funeral at Crowhurst and a memorial service at Westminster Abbey take place at noon to-day.

The late Sir Frederick Palmer, K.C.M.G., C.I.E., M.Inst.C.E., etc.

Senior Partner, Messrs. Rendel, Palmer and Tritton, Consulting Engineers

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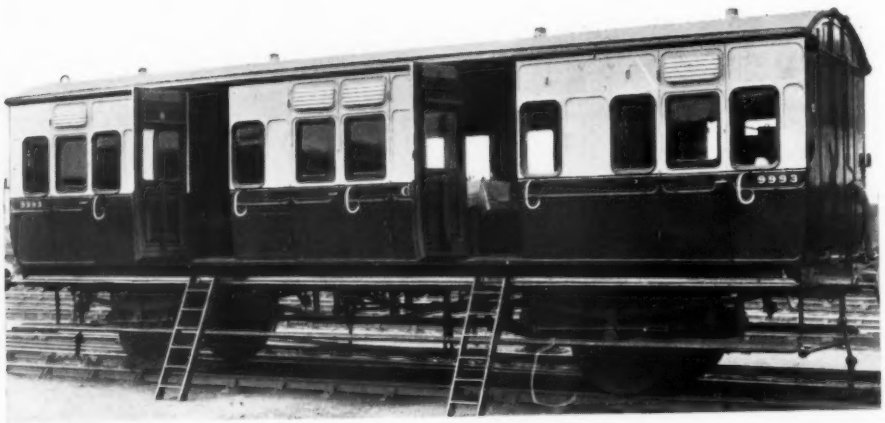
HUNGARIAN STATE RAILWAYS

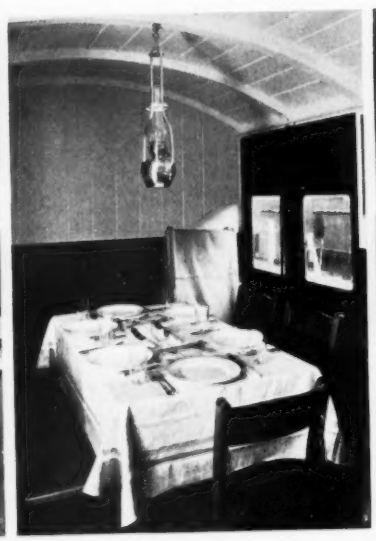
The President of the State Railways Management, His Excellency L. von Samarjay, has retired and been succeeded by the Vice-President, Dr. Otto Senn. The Director of the Mechanical Engineering Section, Ministerialrat Kornel von Lárner, has been nominated Vice-President in the latter's place.

Herr von Samarjay was born in 1870 at Bratislava and after completing his technical studies at Budapest gained practical experience with the Kaschau-Oderberg Railway Company, and with a commercial undertaking. He joined the Hungarian State Railways in 1920, taking charge of the Mechanical Engineering Department, and became President of the Management seven years later, when he was granted the rank of a State Secretary. During his term of office many changes in organisation have been made and important works carried out, notably the electrification of the main line from Budapest to Hegyeshalom. Since 1932 Herr von Samarjay has presided over the Technical Committee of the Central

Great Western Railway Camping Coaches



In "The Railway Gazette" of April 6, reference was made to a new series of camping coaches recently turned out by the G.W.R. One of these is illustrated opposite and below are interior views—left to right—its kitchen, dining, and a bed room. These "rail caravans" accommodate six campers, and are fully equipped with kitchen utensils, plate and crockery, table and bed linen, and are stationed at seaside and other beauty spots and unsophisticated resorts



NEW ZEALAND STATION GARDENS

In the South Island of New Zealand a combined ladies' committee of the Horticultural Societies inspects and awards prizes for the most attractively kept station premises. There is keen competition and the railway management lends assistance by the supply of soil and protective equipment according to the needs of any station. Southbrook station garden, here illustrated, was a recent prize-winner. In North Island efforts are more individual, depending upon the enterprise of stationmasters. At Hamilton, however, the local Beautifying Society has turned the railway grounds into a small park with flower gardens, rose and creeper-covered trellises, lawns and giant palms

European Railway Association in which he was always keenly interested.

Dr. Otto Senn, who was born at Füle in 1879, joined the Hungarian State Railways in 1900, went to the Kaschau-Oderberg line in 1913 and rejoined the former service in 1922, being given charge of the Commercial Department in the following year and becoming Vice-President in 1930. He has been largely responsible for the re-organisation of the rates and fares and the close co-operation between the State Railways and Hungarian industries. He has moreover been instrumental in co-ordinating the railway road motor services and in the transfer to the State of various light railways, as well as the Hungarian lines of the Danube-Save-Adria Company's system.

CHINESE RAILWAYS

Mr. Siao, hitherto Secretary, has been appointed Traffic Manager of the Nanking-Shanghai and Shanghai-Hangchow-Ningpo Railways, and Mr. Wong Chi-kang has been appointed Assistant Traffic Manager. Mr. Yuen Dzau-chang, who for many years has been Assistant Traffic Manager of the Nanking-Shanghai Railway and recently of the two railways, has been made concurrently Assistant Traffic Manager and Chief of the Traffic Division.

Dr. Hsieh Wen-lung, who was formerly Assistant Traffic Manager and Chief of the Traffic Division of the Nanking-Shanghai and Shanghai-Hangchow-Ningpo Railways, has been appointed Associate Managing Director and Traffic Manager of the Hangchow-Kiangsan Railway, with headquarters at Hangchow.

Mr. F. A. Harris retired from the position of Chief Accountant, Nanking-Shanghai and Shanghai-Hangchow-Ningpo Railways, at the end of March and is succeeded by Mr. W. O. Lancaster. Mr. Harris has served on Chinese Railways for 36 years, and for 33 of them was connected with the Peiping-Mukden Railway. He has been in the position from which he now retires for the past three years. Mr. Lancaster rose to be Acting Chief Accountant of the two Shanghai lines in 1923 and subsequently became Chief Accountant, from which position he retired three years ago. He recently returned to China from retirement and was re-appointed Chief Accountant as from April 1.

Mr. S. F. Mayers, late Chairman of the Chinese Central Railways, left estate valued at £22,557 (£22,255 net).

Mr. W. G. Bishop, M.Inst.Mech.E., M.Inst.T., has retired from the position of Locomotive Superintendent, Natal System, South African Railways. Trained in England, Canada and the U.S.A., Mr. Bishop joined the Cape Government Railways in 1896 and rose rapidly through the various grades until he became Superintendent (Mechanical) in 1915. He was appointed System Locomotive Superintendent at Durban in 1926 and since then has frequently acted as System Manager. He was awarded the Gold Medal of the Institute of Transport, for a thesis on "Locomotive Running Shed Practice in South Africa," in 1921.

It is with regret that we have to record the recent death of Mr. Terence Clarke, Railway Superintendent, Port of London Authority.

Mr. J. W. H. Rea, Chief Mechanical Engineer of the Buenos Ayres Southern and Western Railways, returned from leave in Europe on March 1.

We regret to note the death on April 6, of Sir Robert McCall, K.C., Registrar of the Railway and Canal Commission, at the age of 84.

With regret do we note the recent death of Mr. W. J. Gunstone, who retired from the position of Chief Auditor of the Rhymney Railway in 1922, after 50 years' service with that company.

Mr. W. D. Knight, Chief Mechanical Engineer, Egyptian State Railways, is relinquishing his post at the end of the current month. We published his biography and photograph in THE RAILWAY GAZETTE of July 28 last.

Señor Faustino Villamil has been appointed by the Board of Directors of the Northern Railway of Spain to be Assistant Manager of that company in Madrid. Señor Villamil has been Technical Assistant for some time past, and was one of the delegates representing the Norte at the last International Railway Congress at Cairo.

THE LATE LORD FARINGDON

The following appreciation of the late Lord Faringdon, written by a retired Great Central Officer, appears in the current issue of the *London & North Eastern Railway Magazine*:—

"As a Railway Chairman it will be readily conceded by any who have been associated with Lord Faringdon that his apprehension of intricate detail and exposition of complicated railway schemes involving great expenditure was masterly and convincing. At critical periods when the railway system he was interested in was threatened in any way, he was swift to act. At other times, if faced with strike difficulties, he sought sympathetically to understand every point of view, and gave patient and careful hearing to representatives of the staff. The writer remembers occasions when it obviously gave him pleasure to concede their claims. He possessed a ripe knowledge of men and affairs, and was gifted with wisdom to use it. His advice and guidance were of the utmost value to any corporation which had the advantage of his leadership. His quiet dignity conveyed a sense of power and confidence to any business assembly."

Sir Vincent Raven, K.B.E., left estate valued at £20,036 (£19,453 net).

INDIAN RAILWAY STAFF CHANGES

Mr. C. A. H. Edwards, Officiating Chief Engineer, Surveys and Constructions, N.W.R., has been granted leave for approximately two years preparatory to retirement, as from April 27.

Mr. A. K. Muirhead has been appointed to officiate as Controller of Stores, N.W.R., as from February 8.

Mr. E. E. Ellis has been appointed to officiate as Deputy Chief Commercial Manager (Claims and Refunds), E.I.R.

Mr. W. H. Brocklehurst has been appointed to officiate as Deputy Chief Engineer, G.I.P. Railway, as from January 3, *vice* Mr. R. Sephton proceeded on leave.

Mr. A. C. Austin, Superintendent Maintenance, B.N.R., has been appointed to act as Chief Engineer from March 13 *vice* Mr. L. G. W. Hill, Chief Engineer, who has been granted leave for eight months from that date.

Mr. A. M. Robertson, Superintendent Equipment, B.N.R., has been appointed to act as Chief Mechanical Engineer *vice* Mr. C. E. Chase, proceeded on leave from March 23. Mr. J. Humphries, Superintendent Workshops, succeeds Mr. Robertson, and Mr. B. Goddard becomes Acting Superintendent Workshops from the same date.

Mr. G. St. G. Higginson has been appointed Acting Superintendent Rates and Development, B.N.R., from March 17 *vice* Mr. R. A. Leakey, Superintendent Rates and Development, granted leave.

Mr. H. N. Colam, B.A., M.Inst.C.E., Agent of the M. & S.M. Railway, has been granted six months' leave as from April 7. Lieut.-Colonel R. H. Stallard, O.B.E., R.E. (Ret.), has been appointed to act as Agent in his place.

Mr. C. I. Hutton, Locomotive and Carriage Superintendent, Burma Railways, has been granted leave for 18½ months as from March 2, preparatory to retirement.

Mr. J. E. M. Rowland, Deputy Chief Engineer, Burma Railways, has been granted leave for 8½ months, as from February 27.

Mr. S. E. L. West, O.B.E., V.D., has been appointed to officiate as Deputy Chief Commercial Manager, N.W.R., as from January 22.

Mr. H. L. Glass, Deputy Agent, North Western Railway, is invalided from Government service, with effect from February 25.

Mr. W. G. H. Young, Divisional Superintendent, E.I.R., has been granted leave for 8 months as from March 10.

A New L.M.S.R. Speed Record

(*See editorial note on page* 620)

A speed record of note was achieved over L.M.S.R. metals on the evening of Friday last, April 6, when the 4-6-2 locomotive No. 6200, *The Princess Royal*, was tried for the first time on the 5.25 p.m. express from Liverpool to Euston, which has the fastest booking on the L.M.S.R. system, being scheduled to cover the 152·7 miles from Crewe to Willesden Junction in 142 min. start-to-stop. Actually, with a 12-coach train weighing 354 tons empty, and 380 tons with passengers and luggage, this journey was completed in 134 min. 37 sec., at an average speed of precisely 68 m.p.h., notwithstanding the fact that signal checks were experienced at Rugby and approaching Willesden, as well as a slight check at Leighton, which together cost a little over 2½ min. The net time for the 152·7 miles was thus 132 min., or 10 min. less than the time booked. So far as records are available, this is the quickest time which has yet been made from Crewe to Willesden. From Whitmore to Wembley, a distance of 139·5 miles, the time taken was 118 min. 43 sec., which gives a pass-to-pass average of 70·5 m.p.h., inclusive of the usual service slack round Trent Valley curve at Stafford, and the very severe slowing through Rugby. A maximum speed of 85 m.p.h. was reached both at Hademore troughs and at Castlethorpe, and over five well-separated stretches of line the speed rose to more than 80 m.p.h. One of the most notable feats, however, was the start, as in 2 miles out of Crewe, up a gradient of 1 in 330 and 269, a speed of 50 m.p.h. was attained, increased to 59 up the 1 in 269 to Betley Road, and then maintained steadily at the latter figure up the 3 miles at 1 in 177 to Madeley, with a final acceleration to 62 up the 1 in 348 to Whitmore troughs. A time of only 12 min. 26 sec. from Crewe start to Whitmore pass, 10·5 miles, is probably unparalleled with such a load as this. It will be noted that a gain of 6½ min. had been registered as early in the run as Nuneaton, and even more time would have been gained to Willesden but for the Leighton check, which resulted in a slight easing of the engine from there onwards. In any event, however, a notable run was made, which showed the tractive capacity of the locomotive to great advantage, and reflected credit on Driver A. Parsons, of Crewe, who was at the regulator. The actual times and speeds, which were recorded jointly by Mr. Cecil J. Allen and Mr. D. S. Barrie, are set out in the annexed table. From Liverpool to Euston the total time, including 5 min. standing at Crewe, 1 min. at Willesden, and 2½ min. loss by out-of-course checks, was 3 hr. 12 min., and on this basis a non-stop time of 3 hr. over the 193·7 miles from Lime Street to Euston would have been perfectly feasible with a clear road.

L.M.S.R. CREWE-EUSTON.
Engine: 4-6-2 No. 6200, *The Princess Royal*.
Load 12 = 354 tons tare, 380 tons full.
Driver: A. Parsons (Crewe).

Distance.		Schedule.	Actual.	Speeds
miles.		min.	min.sec.	m.p.h.
0·0	CREWE	0	0 00	—
4·8	Betley Road	—	6 45	59
10·5	Whitmore	—	12 26	58½*
14·7	Standon Bridge ..	—	15 46	77½
19·2	Norton Bridge ..	—	19 11	82†
24·5	STAFFORD†† ..	26	23 11	38¶
28·6	Milford	—	27 36	67
33·8	RUGELEY	36	31 55	78
37·1	Armitage	—	34 29	75
41·8	LICHFIELD	42	38 13	—
48·1	TAMWORTH	—	42 43	85§
51·6	Polesworth	—	45 36	68¶
55·8	Atherstone	—	49 13	65
61·0	NUNEATON	60	53 35	76½
64·6	Bulkington	—	56 38	70½
70·0	Bunklow	—	60 53	80½
74·9	*Rugby No. 7*	—	stgs.	15¶
75·5	RUGBY††	73	66 44	—
77·8	Hillmorton	—	70 03	57‡
82·8	Welton	—	75 15	76½
88·4	Weedon	—	79 48	72¶
95·3	BLISWORTH	—	85 26	74
98·2	ROADE	94	87 57	68½
103·3	Castlethorpe	—	91 49	85
105·7	Wolverton	—	93 40	72
111·4	BLETCHLEY ..	105	98 24	75
—	—	—	stgs.	—
117·9	Leighton	—	103 51	64¶
122·0	Cheddington	—	107 39	61½
126·4	TRING	119	112 09	55½
130·1	Berkhamsted	—	115 38	72½
137·2	King's Langley ..	—	120 58	83½
140·7	WATFORD	—	123 33	79
144·8	Hatch End	—	126 52	71½
146·7	Harrow	—	128 25	74
150·0	Wembley	—	131 09	—
—	—	—	stgs.	30¶
152·7	WILLESDEN JC. ..	142	134 37	—

* Minimum Madeley Bank (1 m. 177).
† Maximum, Great Bridgeford.
¶ Speed reduced by brakes.
†† Service slack.
§ Maximum, Hademore trough.
‡ Attained speed, Kilsby Tunnel.

L.M.S.R. Locomotive Renumbering

(*See editorial note on page* 621)

An important scheme of locomotive renumbering is about to be undertaken by the London Midland & Scottish Railway, with the object of reducing all locomotive numbers within the range of four significant figures. The present locomotive stock of the L.M.S.R. numbers 8,226 engines, but the numbers carried by the engines rise nearly to 18,000. Simplification is the primary object of the change, but there will also be some economy in painting and record when all numbers have been brought down below 10,000. The numbers of the best-known types, such as the "Royal Scots," the new "Pacifics," and the compounds, are not being altered, but the 3-cylinder 4-6-0's of the "5X" power class, usually nicknamed "Baby Scots," are to be renumbered in one continuous series from 5500 to 5541 inclusive, which will be added to by Nos. 5542-5547, recently put into service, and by Nos. 5548-5551, now approaching completion. The 2-6-2 suburban tanks at present numbered from 15500 to 15569 are to become Nos. 1 to 70 inclusive. Engines of the existing 4-6-0 "Prince of Wales" and "Experiment" types of the late L. & N.W. Railway, whose numbers are encroached on by these alterations, will have 20,000 added, so that No. 5500, for example, will become No. 25500; similarly the last remaining L. & N.W. 2-4-0 of the "Jumbo" type, and eight still surviving ex-Midland 2-4-0's between Nos. 1 and 90, will add 20,000 to their numbers until broken up. The foregoing renumbering will be carried out immediately.

At a later date the standard Moguls at present numbered between 13000 and 13284 will become Nos. 2700 to 2984 inclusive, while the standard 0-6-0 tanks (Nos. 1900-1959, 7100-7156, and 16400-16764) will be renumbered in one continuous series from 7200 to 7681; also the 0-4-0 and 0-4-6 dock shunters (Nos. 1540-1544 and 11270-11279 respectively) will become Nos. 7000-7004 and 7100-7109, and the diesel shunters (Nos. 7400-7408) are to be Nos. 7050-7058. The renumberings of this second large batch will take place as and when the engines concerned come into the shops for repairs; and at the same time engines of non-standard types whose numbers are encroached on, such as ex-Midland and L. & N.W. 0-6-0 tender engines, ex L. & N.W. and North London tanks, ex-Midland 2-4-0's, and "Prince of Wales" and "Experiment" 4-6-0's, will in all cases add 20,000 to their existing numbers until they are scrapped. A similar addition will take place when the numbers of existing non-standard engines below 9999 are taken by new standard locomotives. A number above 20000 will thus indicate, in effect, that the engine concerned is non-standard, and on the duplicate list, though there may still be several years of useful life before it. Ex-Lancashire & Yorkshire, North Staffordshire, Furness, Caledonian, Glasgow & South Western, and Highland locomotives at present numbered between 10000 and 20000 will retain their present numbers until scrapped; but all standard locomotives will carry numbers below 9999.

S.R. Telephone Inquiry Office.—The Southern Railway has brought into use a new telephone inquiry office at London Bridge station. A staff of 25 operators deals with all public telephone inquiries relating to trains, fares and other traffic matters, excepting those regarding Continental services, which are still handled at Victoria. This is the first general telephone information service to be operated by the company, and it was opened in time for the Easter holiday period. The office receives inquiries from 7 a.m. until midnight. Its telephone number is Hop 5100.

MINISTRY OF TRANSPORT ACCIDENT REPORT

Alne, L.N.E.R.: December 6, 1933

In this accident an up fish train ran into an up freight train. The rear vehicles of the latter were derailed and the down main line fouled in consequence. At the moment of collision an express passenger train was approaching on the latter line and it ran into the obstruction, with the result that the engine of the express and its four leading coaches were derailed.

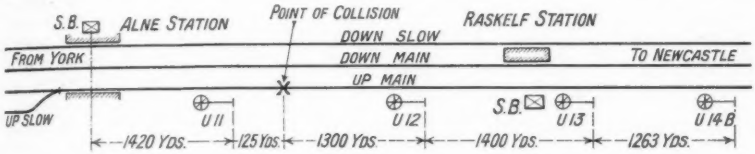


Diagram showing point of collision

The engine hit the fish train, derailing eight of its vehicles. Mainly because three of the four derailed passenger coaches were empty there were no personal injuries but the wreckage was so serious that all three running lines were obstructed for 20 hours and both main lines remained blocked for a further period of 7 hours. An inquiry into the accident was held by Lieut.-Colonel Woodhouse, whose report was issued on March 27.

This section of line is protected by automatic signals and the accompanying diagram is based on that which appeared in THE RAILWAY GAZETTE of April 28, 1933, when the resignalling of the York-Newcastle main line, L.N.E.R., was described. The collision occurred at about 8.37 p.m. on a very dark but fine and frosty night; there was some mist. It was stated in the evidence that an engineer's rail motor trolley left Alne on the up slow line at 7.53. There are instructions in force that a train is not to be admitted into an automatically-signalled section behind a motor trolley until the arrival of the trolley has been reported by telephone from the signal-box ahead. At 7.57 a goods train arrived at Alne which was to continue its journey on the up slow line. But it could not proceed until the motor trolley had arrived at the next box, and as an up passenger train was due, the goods train had to be shunted on to the down main line. At 8.23 the arrival of the motor trolley was reported and, after the passenger train had passed on the up main line at 8.28, the goods train was crossed back off the down main and proceeded on its way on the up slow line, clearing the track circuit of the facing points at 8.36. Meanwhile, at 8.31, the goods train concerned in the collision arrived at signal U.11, which, it should be noted, is controlled from Alne as a home signal. In reply to the fireman's telephone message, it was told to wait there until the signal cleared. This signal was changed by signalman Breckon as soon as he could reverse the facing points leading to the up slow so as to lie for the up main. It should be recorded at this point that the signalman at Sessay Wood, the next box open in the rear, said that the tail lamp on the goods was giving a good steady light when the train passed him, and he thought that he could have seen it about ¾ mile away, though he did not actually keep it under observation for that distance.

The driver of the goods train, Thomas Edward Howarth, stated that though there was a slight haze he had had no difficulty in seeing the colour light signals south of Northallerton. He found automatic signal U.12 at "red," and, after waiting there for a minute or more, ran forward cautiously to signal U.11, coming to a stand a few yards in rear of it. His fireman went to telephone to the signal-box from U.11, and the guard came forward to inquire if this had been done. Howarth thought that the train stood at the signal for nearly ten minutes before it turned to "green"; he did not start until the guard, who was near the engine, had returned to the van and given the right-away signal. The first collision occurred just as his train commenced to move.

The driver of the fish train, George Short Logan, said that though there was some mist south of Northallerton he was able to pick up the colour light signals when about half-way through each section, that is to say at a range of about 700 yards. He got a yellow light at U.14 B and had come almost to a stand at U.13 when it changed from "red" to "yellow." He ran cautiously to U.12, which remained at "red," and stopped there. After standing there over a minute he proceeded forward slowly under the stop-and-proceed rule, at between 5 and 10 m.p.h. Signal U.11 was at "green" when he first saw it, about half-way through the next section, and after drawing his fireman's attention to it, he increased his speed to about 15-20 m.p.h. under the impression that the signal had been cleared for him. As he approached the signal, the intensity of its light at first increased and then seemed to lessen; when this occurred he saw the red tail lamp of the stationary train at a distance which he estimated as from 50 to 75 yards. He did all that he could to stop and thought that his speed had been reduced to about 10 m.p.h. before the collision, which did not seem to him to be a severe one. He felt certain that he could have avoided the collision if he had seen the tail lamp a few seconds earlier.

As the stop-and-proceed rule has been much discussed in consequence of this accident, we would say that in August last it was amplified by the L.N.E.R. so as to call for cautious running through two consecutive sections after an automatic signal has been passed at "danger" instead of, as formerly, as far as the line is clear or to the next signal. That amplification was in accordance with rule 55 (*g*) of the R.C.H. new rule book that came into operation at the beginning of last year. The rule reads:—

> When a driver finds an automatic stop signal at "danger," he must bring his train to a stand, and, if a telephone is provided at the signal, communicate at once with the signalman and act in accordance with his instructions. Should he receive instructions to pass the signal at "danger," he must give one long whistle and proceed cautiously as far as the line is clear or to the next stop signal in advance at such a speed as to enable him to stop short of any obstruction there may be. If the telephone is out of order, or a telephone is not provided at the signal, and the "danger" indication is not changed, the driver must wait one minute or other prescribed period, give one long whistle, and then proceed cautiously as above directed.
>
> In such circumstances, if the next stop signal in advance is also an automatic signal and is in the "caution" or "clear" position, the driver must continue to proceed cautiously to the next stop signal beyond.

Driver Logan admitted that he had not previously realised the object of the instruction in rule 55 (*g*) that drivers are to run cautiously for two sections after passing an automatic signal at "danger," even if the two following stop signals are at "clear"; he said he was convinced, when he saw U.11 at "green" that the preceding train had been diverted at Alne and that the line was therefore clear for him. He also said that as he had a fully braked train he did not, at the time, look on 15 to 20 m.p.h. as other than a cautious speed. He thought that until the rays of the green colour light signal were slightly masked by the vehicles of the standing train, its brilliance prevented him from seeing the tail lamp, but admitted that if he had then been running at only five m.p.h. he would have been able to stop in time. He added that he had often been stopped at the Hall automatic semaphore signals formerly existing between Alne and Thirsk, and at the new colour light signals, but had never before had any difficulty in stopping clear of the train in front of him when running under the stop-and-proceed rule.

The driver of the down express, Charles Edgar Cable, said that he

received no warning of the obstruction, and estimated that his speed when he struck it was from 35 to 40 m.p.h. The guard of the express, George Brown, said that the second collision threw him off his feet. After relighting his lamp, which had been knocked over, he went forward towards the front of the train and found the down slow line obstructed. As he recollected overtaking a goods train on the down slow line a little way south of Alne he hurried back to stop it, putting down detonators on both the down slow and down main lines. He said he could see the single headlight of the approaching goods train at a considerable distance, which, he thought, might have been between 500 and 600 yards, and that it stopped after exploding the southernmost of the detonators which he had put down.

It is clear that the immediate cause of this accident was driver Logan's failure to comply with the paragraph of rule 55 (*g*), which prescribes cautious running for *two* sections after an automatic signal has been passed at "danger," even though the next signals encountered are showing a "proceed" indication. Colonel Woodhouse cannot agree with his suggestion that a speed of some 20 m.p.h., even with a fully braked train, was a cautious one, for, as revealed by the accident, such a speed was too high for the driver to stop clear of the obstruction ahead; moreover, the driver's own admission that he did not accelerate to that speed until he had seen signal U.11 ahead of him at "green" indicates that his understanding of the rule was altogether faulty. The report continues that his hasty assumption, when he saw the signal at "green," that it had been cleared for him, is difficult to understand, inasmuch as he admitted that he had often passed the semaphore signals formerly existing between Alne and Thirsk under the stop-and-proceed rule and he ought therefore to have been well aware that a green light ahead of him in such circumstances might apply to a train already standing in the section.

After considering the statements of the enginemen of the express passenger train that they could see the signals at a range of 1,200 to 1,400 yards, and of the guard of that train, that he could see an oil headlight over a quarter-of-a-mile away, Colonel Woodhouse is of opinion that Logan ought to have been able to see the tail lamp of the stationary goods train at a greater distance than 50 to 75 yards. It is possible that, once he had made the incorrect assumption that signal U.11 had been cleared for him, his attention relaxed, and that hence he did not notice the presence of the tail lamp as early as he might have done.

The absence of casualties in the express, which collided with the wreckage at from 35 to 40 m.p.h., was mainly due to the fact that it was derailed to the left, away from the stationary trains, but the modern design of its coaches and the strength of the couplings, which kept them in line subsequent to derailment, were also important factors. Much more serious consequences were undoubtedly prevented by the alertness of, and prompt protective measures taken by, guard Brown, of the express, who realised that the goods train which he had noticed on the down slow line was at no great distance.

The chain of events which led up to this accident was initiated by the occupation of the up slow line between Alne and Beningbrough by the motor trolley which left Alne at 7.53 p.m. It had been found that automatic signals do not invariably assume the "danger" aspect after the passage of these vehicles, as they sometimes fail to operate the controlling track circuits on account of their light weight; in consequence, the regulation has been introduced that they are to be protected by the block system, by means of telephone messages exchanged between open signal boxes. The company's officers are considering measures whereby this disability can be removed, and such steps appear to be very desirable in order that delays to traffic caused by the movement of motor trollies under the present regulation may be obviated.

The circumstances of the first collision were practically identical with those of the accident at Three Bridges, on the Southern Railway, on January 28, 1933.* In both cases a driver who had passed an automatic signal at "danger," in clear weather, under the stop-and-proceed rule increased his speed on sighting the next —a controlled—colour light signal ahead, which had been cleared to allow a train standing at it to move, and then failed to see the tail lamp of that train in time to stop clear of it. In addition, two collisions between goods trains which occurred on the London & North Eastern Railway at Poppleton Junction, a few miles south of Alne, on August 27 and September 10, 1933,† appear to have been due to a similar cause, namely the failure of a driver, running under the stop-and-proceed rule in clear weather, to stop short of a train standing at a colour light signal ahead.

Reference has already been made to the long period during which automatic semaphore signals have been in use over roughly half of the length of line between York and Northallerton which has recently been equipped with colour light signals, the majority of which are not controlled from a signal-box under normal conditions, but clear automatically. The use of the stop-and-proceed rule is thus no novelty on this section of the line, but rear-end collisions arising from its application with the former automatic semaphore signals were very rare. In view of the increased incidence of such accidents since the line was resignalled, it seems appropriate to draw attention to the altered conditions thereby caused.

The automatic semaphores were some 25 to 30 feet in height and were lit at night by oil lamps whose brilliance was comparable to that of a tail lamp; hence a driver approaching such a signal at night could tell without difficulty whether there was a train already standing at it, at any rate in clear weather, since the respective lights were of about the same power, and well separated. The new searchlight signals, on the other hand, are fixed at about the level of a driver's eye, 11 ft. 6 in. above the rail, and their brilliance is much greater than that of an oil tail lamp. In consequence, a driver running under the stop-and-proceed rule has not only to look out for two lights, apparently not widely spaced though differing greatly in intensity, but also to determine which of them is the nearer, and to stop short of it. Under ideal conditions a driver should have no difficulty in doing this. But when visibility diminishes, as on the night of this accident, Colonel Woodhouse thinks it is probable that the reduction in the effective range of a tail lamp is proportionately greater than in the case of a carefully focussed colour light signal; this, coupled with the lessening of the apparent distance between the two lights, consequent upon the lowering of the signal to about the level of the driver's eye, is a possible explanation of accidents of this nature.

The whole question of the means to be adopted to safeguard operation under the stop-and-proceed rule, particularly when visibility is poor, is now under consideration by the companies, and one of the matters engaging their attention is the practicability of increasing the brilliance of tail lights, at any rate in areas where automatic colour light signals are in use. Colonel Woodhouse feels no doubt that if there had been a more powerful tail lamp on the goods train Driver Logan would have received earlier warning of its position, and, despite the fact that he was running too fast, the first collision might have been prevented, or its violence minimised.

Colonel Woodhouse, in conclusion, says:—

"The company's regulations do not insist upon the speed at which drivers may run in such circumstances being kept within a specified upper limit, and I recommend that this should be considered. In view of the fact that an automatic signal may be held at 'danger' through causes such as a broken or misplaced rail, or an unlit obstruction, limitation of speed to a

* See THE RAILWAY GAZETTE of August 18, 1933. —ED. *R.G.*

† Which apparently have not been the subject of an inquiry.—ED. *R.G.*

maximum of 5 m.p.h., as in one company's practice, is suggested.

"The interval between the first and second collisions was so short that no warning could be given to the enginemen of the down express passenger train, but Guard Brown, of that train, acted with commendable promptitude in stopping a goods train approaching on the adjacent down slow line after the second collision had occurred.

"While brilliant colour light signals, placed at about the level of a driver's eye, are advantageous for various reasons, particularly under unfavourable weather conditions, there is no doubt that where the stop-and-proceed rule is in force these signals make it more difficult, at night, for a driver to detect, and judge the distance of, the comparatively faint oil tail lamp of a preceding train. Previous to the accident now under consideration three collisions took place during 1933 as a result of operation under this rule; in all four cases there is reason to suppose that if more brilliant tail lamps had been in use collisions would have been prevented, or the violence minimised.

"Consideration is at present being given to the practicability of additional measures to safeguard operation, in both clear and foggy weather, under the stop-and-proceed rule, the applicability of which has been extended in view of the increased use now made of automatic colour light signals. Until experiments with more powerful tail lamps, which the companies are at present making in this connection, are concluded, it would be premature to make a recommendation on this point. But I feel that whatever type of tail light is used, it should be carried as low as practicable, so that its rays might be as widely separated as possible from the beam projected by colour light signals."

Future U.S.A. Railway Developments

Future development of American railroads was outlined recently by Mr. Ralph Budd, of Chicago, President of the Chicago, Burlington & Quincy Railroad. It will be recalled that Mr. Budd, during his presidency of the Great Northern Railway, was selected by the Soviet Government in 1930 to make a 16,000-mile tour and inspection of the Russian railway system.

"In times when business is slack," Mr. Budd said, "alert managements turn their attention to improving their facilities. They have an opportunity to look around and take stock of themselves—to search out and end weaknesses. In this activity the railways have played a leading rôle and have thus prepared the way for work which will give jobs to thousands when the financial pressure on them eases. I will cite three possibilities to illustrate what I mean: (1) rails; (2) freight cars; and (3) air conditioning.

"Regarding rails, Professor A. N. Talbot, of the Research Department of the University of Illinois, working with the railroads, has developed the new 112-lb.* rail in contrast with the 90-lb. rail now in general use in the west. It will give twice the service of the 90-lb. rail, is much stronger and is far better designed to handle the new high-speed trains that are being developed. Its joints are much improved."

"The Burlington is now laying this type, and we expect that eventually we shall install it on the entire system. There are 30,000 miles on the western roads where this track is desirable, and in the years to come doubtless the existing rails will be replaced by it. There are 176 tons required for a mile of track, so the total rail needed for the 30,000 miles would be 5,280,000 tons. In addition 1,700,000 tons of fastening would be required, making a grand total of 6,980,000 tons. At the present rate of $36·37½ a ton, the total outlay would be close to 254 million dollars. These estimates do not take into account the East, where a heavier rail is used because of the heavier traffic. Roughly Chicago may be said to be the dividing line between East and West in the use of rail of different weights."

"As to freight cars, our research departments are looking for the ideal piece of equipment, for an improvement in the ratio of dead weight to load carried. Of course we know that there are steel alloys which would permit the use of far lighter cars than we now have, but the cost would be prohibitive. Once the ideal car is found the roads will turn to it. In normal years the roads use two million freight cars to handle the nation's business. The cheapest car costs about two thousand dollars. On a basis of two thousand, even, there is a potential expenditure of four billion dollars for replacements."

The third prospective development cited by Mr. Budd was that of the air conditioning of passenger cars. He pointed out that this is a field that has hardly been touched. Though some of the special cars on the more de luxe trains are so equipped, the vastly greater bulk of American railway passenger cars have no system of air conditioning whatsoever.

* Illustrated and described in THE RAILWAY GAZETTE of August 11, 1933.

Reconditioned Inner Circle Stock

As we recorded on page 476 of our March 16 issue, the first of the reconditioned Inner Circle trains of the London Passenger Transport Board was placed in service on March 8. The familiar all-brown livery of the former Metropolitan Railway has been replaced by red and cream similar to London tube stock. As will be seen from the above illustration, the coaches bear the name "Underground" on the lower panel. The prominent display of the word "Circle" on the front of the train and on the side of each car assists passengers in distinguishing between the Inner Circle trains and those running on main east-west District or Metropolitan services. The redecoration of the interior has been carried out in a scheme of blue and cream, while new upholstery, new fittings, and improved lighting give additional comfort. As we have already recorded, all the Inner Circle trains, totalling 90 cars, are to be reconditioned in a similar manner, and it is anticipated that the work will be completed by September. We referred editorially in our issue of February 9 last to the history of the Inner Circle service.

RAILWAY AND OTHER MEETINGS

ASSOCIATED ELECTRICAL INDUSTRIES LIMITED

The annual general meeting of the shareholders of the Associated Electrical Industries Limited was held yesterday (Thursday) at Bush House, Aldwych, W.C.2, Sir Felix J. C. Pole (Chairman of the company) presiding.

The Secretary (Mr. R. H. Haviland) read the notice convening the meeting and the auditors' report.

The Chairman, in moving the adoption of the report and accounts, said if shareholders would refer to the balance sheet they would see that the total issued capital and debentures remained the same as last year. Creditors, loans, reserves, &c., remained at practically the same figure as a year ago. On the assets side of the balance sheet the share and debenture holding in subsidiary companies and amounts owing by them totalled £4,376,133, against £4,403,225, a decrease of £27,092. During the year further B.T.H. preference shares had been purchased and on the other hand amounts owing by subsidiary companies and debentures in subsidiary companies had been reduced.

Turning to the profit and loss account, they would see that depreciation £81,917 was more than last year by £3,353. This amount referred only to the assets of the Metropolitan-Vickers Electrical Company. The total amount of depreciation provided in 1933 by all the companies in the group was £232,159. Provision for income tax was £89,399, against £130,888 last year. The profit made during the year including dividends from subsidiary companies (which dividends in the aggregate were slightly less than the profits earned) amounted to £397,169, against £474,359, a decrease of £77,190. In recent years a number of contracts had been in progress against which it was deemed desirable to make special reserve for contingencies. During 1933 it was apparent that sufficient provision had been made and therefore profits from such of these contracts as were completed during 1933 had been brought into account.

He would now direct their attention to the consolidated balance sheet, which was intended to show the position of the Associated Group if regarded as a single company from a financial point of view. The total capital and debentures as shown by this statement amounted to £9,015,196, of which £1,826,606 or 20·3 per cent. was held by share and debenture holders in their subsidiary companies. In regard to this item shareholders might be interested to know that when they first published a consolidated balance sheet —as at December 31, 1930—the amount held by share and debenture holders in their subsidiary companies was £3,624,987. This meant that, apart from debentures redeemed, their share and debenture holding in subsidiary companies had increased by £1,655,746, whereas the issued capital of A.E.I. had been increased by £1,399,560 only.

The report showed that the directors recommended how they dealt with the balance for the year, and in due course he would submit the necessary resolution. He would also submit a resolution in regard to the conversion of their cumulative preference shares and ordinary shares into stock—a very desirable change. The report recorded that the trading results reflected the industrial depression, which had been the outstanding feature of the last two years. Orders executed during the year were considerably below the average of the previous ten years. Indeed, last year was one of the most trying years that their companies had ever experienced. At their last meeting he told them that the outlook was not re-assuring, that adverse trading conditions continued to prevail, and that their export trade was impeded by financial and exchange complications in many countries. These conditions affected all the companies in the group. No ordinary dividend was being paid by two of their principal subsidiary companies. This meant a net loss to Associated Electrical Industries of £70,959. Regarding this loss of revenue, and answering a question in a financial paper, he had to say that their practice had been to include dividends paid by subsidiaries in their current accounts: in other words, the accounts now before them reflected the loss of dividends in respect of the year 1933.

After a brief reference to the various orders and contracts secured and dealt with during the past year, the Chairman said that last year they met during a period of anxiety following on the arrests by the Russian Government of six of their engineers. They went through a trying ordeal, but he was glad to say that they were all well and were usefully employed in the Metropolitan-Vickers organisation. During the trial it was made clear that no charge was made against the company and Mr. Litvinoff had told him the same thing when he saw that gentleman in London. The incident was closed, but he was sure they would wish to record their appreciation of the kind and sympathetic messages which had been received from H.M. the King and H.R.H. the Prince of Wales, and the grateful thanks to H.M. Government and Sir Esmond Ovey for their energetic and most helpful action in the matter.

Last year they had practically no orders from Russia, but he was glad to say there appeared to be every probability of the U.S.S.R. placing orders with them this year, and in that connection the completion of the trade agreement between this country and Russia was most welcome. In regard to trade agreements generally, and bearing in mind what had been said at their former meetings, they were extremely pleased that the Overseas Trade Department of the Board of Trade last year entered into agreements with the Argentine Republic, Denmark, Norway, Sweden and Belgium. They all must hope that the policy of negotiating trade agreements would be actively and successfully pursued by the Government.

They would expect him to say something about trade conditions. They were still suffering from a reduced demand for electrical products and a consequent excess of productive capacity in the electrical industry. Their own policy was to co-ordinate the activities of the companies embraced in Associated Electrical Industries Limited, and much useful work had been done in that direction.

So far as the industry as a whole was concerned, the problem of dealing with excess manufacturing facilities was still engaging their attention in association with their principal competitors, with whom he was glad to say cordial relations existed. Personally he was attracted by what was termed "planned control" of industry, believing that a complete solution of the problem was not to be found by large scale amalgamations.

Meanwhile, however, much could be done by co-operation between members of the industry. In regard to amalgamations, in which their company's name was not infrequently coupled with that of the General Electric Co. Ltd., those who had been much longer associated with the electrical industry than he had held strongly the view that such an amalgamation would not be in the best interests of the industry or of the shareholders. But they were co-operating closely with some of their competitors in a number of directions; they were working together in certain research problems and pooling the results, and they would be jointly interested financially with some of them in the production of certain articles and semi-finished parts. In this way they could make sure that the electrical industry was self-contained and that national efficiency could best be served.

The scramble for the reduced volume of work available had led to excessive price cutting, and, of course, reduced profits. So far as the prospect for orders in the immediate future was concerned, he could speak hopefully. Everywhere there were distinct signs of improvement, and their order book to-day was very much greater than it was this time last year; and in their works they had already many more men than at this time last year. When, however, one tried to visualise trading conditions for a long period ahead, one had to recognise that the world was still suffering from three disturbing factors—political unrest, trade restric-

tions, and an uncertain currency situation. So long as these factors had to be reckoned with, it was impossible to speak too positively regarding world trade. For the immediate future, however, he was satisfied that protection of home market, arrears of capital expenditure, reduction of taxation, and encouragement by the Government of capital development by public authorities would keep the company's own factories busy, and would substantially reduce unemployment in this country.

The resolution was agreed to.

Subsequently, on the motion of the Chairman, the following resolution was unanimously adopted:—

That pursuant to clause 49 of the Articles of Association of the company all the fully paid up shares in the capital of the company now outstanding be converted into stock and that the directors be and are hereby authorised and requested to take all necessary steps for carrying out such conversion, and that the unissued shares in the capital of the company be converted into stock as and when from time to time the same are issued and fully paid up.

BRITISH THOMSON-HOUSTON CO. LTD.

Presiding on Wednesday, April 11, at the 39th ordinary general meeting of the shareholders of the British Thomson-Houston Co. Ltd., Mr. William C. Lusk (Chairman of the company) said the profit for the year, after deducting all expenses and charges other than interest on debentures and loans and after providing for income-tax, was £256,948 (as compared with £392,015 for the previous year), to which there was to be added the amount brought forward from the previous year, £227,795, making the total to be dealt with £484,743. After deducting interest on debentures and loans, £83,665, and depreciations, £92,886, there was a balance left of £308,192. Out of that a dividend on the preference shares at 7 per cent. per annum, less income-tax, had been paid, amounting to £78,749, which left £229,443 to be carried forward to the new account (as against £227,795 for the previous year).

Their manufacturing plants had, as usual, been well maintained during the year. Capital expenditure on equipment amounted to £80,209, including about £30,000 in connection with the provision of additional facilities for the production of bulbs at their glass works at Chesterfield for their well-known Mazda lamps and the necessary expenditure at their Rugby works to accommodate the work taken over from the Ladywood Ironworks Limited. They also extended their facilities for the manufacture of certain new lines of domestic appliances, such as B.T.H. electric refrigerators and hot-point electric cookers, washing machines and water heaters, all of which, except the refrigerators, were marketed through their subsidiary company, the Hot-point Electric Appliance Co. Ltd.

RAILWAY AND OTHER REPORTS

Taltal Railway.—The Board has declared an interim dividend of 1s. per share, less income tax, on account of the year ending June 30, 1934, payable to holders registered on April 17, 1934.

Barsi Light Railway.—An interim dividend of 2½ per cent. on the ordinary stock (the same as a year ago) has been declared in respect of the half year to September 30, 1933. It is payable on May 10.

Kassala Railway.—The deficit for 1933 after meeting debenture charges is £45,166, comparing with £44,935 for the previous year. This has been provided by the Sudan Government Railways under the terms of the agreements. With the debit of £216,109 brought in, the total debit balance is raised to £261,275.

Snowdon Mountain Railway.—The net profit for the year 1933 was £4,245 (after charging income tax). A dividend of 5 per cent. will absorb £2,625 and will leave a balance which will increase the total to go forward to £16,064. During the year the company replaced its loans with a mortgage debenture for £32,000, repayable in half-yearly instalments over 30 years.

Canadian National Railways.—The annual report for 1933 shows railway operating revenues of $148,519,742, a decrease of $12,583,852, and railway operating expenses of $142,812,559, a decrease of $12,395,601, leaving a net revenue of $5,707,183, compared with $5,895,433 in 1932. But after provision for taxes ($5,270,248), interest on funded debt and other debits, the whole system had a cash deficit of $58,995,388, which is an improvement of $1,103,118 as compared with 1932.

Sharpness New Docks & Gloucester and Birmingham Navigation.—Receipts for the year 1933 amounted to £97,378, and expenditure to £51,857. After providing for debenture interest, &c., there is a disposable balance of £20,013, which enables the directors to recommend payment of the full dividends on the A, B and C preference stocks (requiring £16,975), and a dividend of 1 per cent. on the consolidated ordinary stock (requiring £3,038). The total quantity of goods imported amounted to 586,754 tons, as compared with 546,825 tons in 1932, and the exports to 22,424 tons, as against 22,251 tons.

Northern General Transport Co. Ltd.—Total revenue of this company, which is jointly controlled by the London and North Eastern Railway Company and the British Electric Traction Company Limited, amounted in 1933 to £554,448 and the expenses to £405,303, leaving a working surplus of £149,145, compared with £145,557 for the year 1932. Provision for renewals is made to the extent of £63,000, comparing with a corresponding provision of £65,100 for 1932. The dividend for the year on the ordinary shares is to be 10 per cent., leaving £31,187 to be carried forward, as against £20,261 brought in.

Stewarts and Lloyds Limited.—The directors recommend a dividend of 2½ per cent. for 1933 on the £4,626,740 of deferred capital. This is the first payment to be made on the deferred shares since that for 1930.

Bolivia Railway.—Net earnings for the half-year to December 31, 1933, are sufficient to pay interest of 0·657 per cent. on the 5 per cent. mortgage and collateral trust income bonds, series A, and 5 per cent. first mortgage bonds. The balance required to enable interest of 1¼ per cent. to be paid has been provided by the Antofagasta (Chili) & Bolivia Railway Company. A distribution of 0·75 per cent. is also being made to holders of the old first mortgage bonds who have not accepted the plan of reorganisation.

A. Reyrolle & Co. Ltd.—For 1933 the net profit was £98,644, against £104,285 for 1932. The ordinary dividend is maintained at 12½ per cent., the sum of £113,855 being carried forward, as against £95,511 brought in. Orders received for the company's manufactures were higher than in the previous year, but sales were less, and there was a reduction in the amount of uncompleted work in hand at the end of the year.

Bruce Peebles & Co. Ltd.—The accounts for the year 1933 show a trading loss of £10,952. For 1932 there was a loss, after crediting £19,522 from reserves no longer required, of £14,500 (including loss of the Canadian subsidiary). The sum of £436 is brought forward, and the directors have decided to transfer the sum of £11,000 (against £14,500 last year) from general reserve, with the result that after eliminating the loss there is a credit balance of £484 to go forward. Again no dividend is paid on either the preference or ordinary shares. The preference dividend is in arrear as from April 1, 1930.

Devon General Omnibus & Touring Co. Ltd.—This company is jointly controlled by the British Electric Traction Co. Ltd. and the Great Western and Southern Railway Companies. Profit for the year 1933, after writing off depreciation on rolling-stock, waiting rooms, plant and furniture, amounted to £30,926. The balance available for dividends, &c., amounted to £30,372, out of which it is proposed to appropriate £5,000 to general reserve, £10,500 to preference dividend, and to pay a dividend of 10 per cent. on the ordinary shares, leaving £5,872 to be carried forward. During the year a scheme was adopted for the acquisition of the goodwill of the Torquay Tramways Co. Ltd. In addition, the businesses of Grey Cars Limited and Fleet Cars Limited (formerly associated companies) have been absorbed.

NOTES AND NEWS

Annual Dinner of the Institute of Transport.—The next dinner of the Institute of Transport will take place at the Connaught Rooms, Great Queen Street, London, W.C.2, on Friday, February 15, 1935.

Rio Underground Fiasco.—Tenders were recently invited for the construction and operation of an underground railway in Rio de Janeiro, but the time limit for their submission expired on March 31 without a single tender having been received, states a Reuters message.

Greek Railway Orders Rumour.—The rumours of forthcoming orders for rolling-stock for the Peloponnesus Railway are probably the result of the recent permission given by the Greek Government to that company to obtain a loan for the purpose of renewing its rolling-stock, as recorded in THE RAILWAY GAZETTE for March 30, on page 559.

Progress of Railway Bills.—The London Midland & Scottish and the Southern Railway Bills, which were to have been considered by a Select Committee of the House of Commons on April 11, have now had all opposition withdrawn, and have been referred to the Committee on Unopposed Bills. The preamble of the London Midland & Scottish Railway Provisional Order (Scotland) has been found proved.

Bugatti Railcar in Service on the French State Railways.—The Bugatti railcar described in our issue of May 26 and September 29, 1933, is now in service between Le Havre and Paris, leaving the former at 12.45 p.m., and the latter at 4.58 p.m. Including a stop in each direction at Rouen the distance of 141¾ miles is covered in 2 hours 15 minutes. The car is available for first and second class passengers, the latter having to pay a supplement of 5 francs.

Associated Electrical Industries Limited.—Mr. Clark H. Minor, President of the International General Electric Company, Inc. (of U.S.), has written to Sir Felix J. C. Pole, Chairman of Associated Electrical Industries Limited, denying the reports published in certain quarters that negotiations are taking place with British interests for the sale of the International company's holding in Associated Electrical Industries. Mr. Minor's letter states: "We have not given consideration to any proposals of selling our shares in Associated Electrical Industries Limited, or of making any change in our policy with reference to our investments in England. As you know, we are large stockholders of the General Electric Co. Ltd., as well as of Associated Electrical Industries Limited. The percentage of our holdings of shares has never been a factor in our attitude toward or influence upon either of these companies as national electrical manufacturing institutions. In the case of the former company, due to restrictions passed by their stockholders, our shares are not represented at their annual meetings. As regards our holdings in Associated Electrical Industries Limited you have had for several years in your possession a full power of attorney giving you the rights to vote these shares in the interests of the development of the British industry."

New Steelworks at Corby.—The £45,000 power transmission line which has been erected to supply the new steelworks of Stewarts and Lloyds Limited at Corby, Northants, was officially put into operation on April 11.

Start of Glasgow-London Air Service.—The first aeroplane to take up regular service between Glasgow and London left the headquarters of Midland & Scottish Air Ferries Limited at Renfrew Aerodrome on April 9.

Snowdon Mountain Railway.—The Snowdon Mountain Railway was reopened on Friday, March 30. The service will continue on weekdays until October, and it is intended to run trains while daylight lasts to enable visitors to witness sunset effects from the summit.

Mishap on the Southern Railway.—The leading bogie of the engine hauling a Cardiff-Portsmouth train was derailed near Bitterne about a week ago. It is understood that the derailment was due to the placing of a heap of stones on the line by some boys. Little damage was done.

Paddington Hotel Improvements.—A cocktail bar and lounge, forming part of the Great Western Royal Hotel premises at Paddington, were formally inaugurated on March 13 by Sir Robert Horne, Chairman of the G.W.R. The bar is designed on the most modern lines, and the lounge, which measures 84 ft. long by 37 ft. wide and 16 ft. high, has been finished in an attractive colour scheme. The walls graduate from light orange to cream and the upholstery of chairs and settees is green. The tables are of polished oak with black fittings. The heating and ventilation system provides for a complete air-change every ten minutes, the temperature being automatically controlled in accordance with climatic conditions. Illustrations of the new cocktail bar and tea lounge are reproduced on page 640.

Railway Wages Board.—What was expected to be the last sitting of the National Wages Board for the railways as at present constituted, opened at 5, Old Palace Yard, Westminster, on Wednesday, and was continued yesterday. The claims under consideration had been referred to the Board before the notice given by the companies to change its constitution and procedure had expired. No points of general public interest arose out of the earlier list of claims dealt with by the Board on Wednesday. An argument arose later as to whether certain cases relating to classification should have been referred to the Wages Board. Mr. Lazenby, for the companies, argued that these cases had been dealt with by the sectional and local councils, and were not properly referable to the Wages Boards. Classification, he contended, was outside the jurisdiction of these Boards. The Board reserved its decision on this point.

First-Class Abolished on G.N. & C. Line.—As from the evening of March 25, the Great Northern & City Line of London Transport abolished first-class accommodation on its trains. All cars are to be entirely rebuilt, re-upholstered and provided with new lighting, in order to conform to a uniform standard of comfort which, it is hoped, will satisfy even former first-class ticket holders. This tube line of the former Metropolitan Railway thus now accords with Underground group practice.

South Wales and 20-ton wagons.—The 5,000 20-ton wagons recently built to the order of the G.W.R. for conveying coal from the South Wales collieries have proved so successful that an appeal has been made for the provision of 50,000 more. It was put forward by Mr. G. L. Seager, son of Sir W. Seager, the Welsh shipping owner, in an address to the Cardiff Chamber of Commerce on March 26. He urged that obsolete methods should be scrapped and the industry allowed to develop on modern lines, among them this revision of transport whose inception has already been such a boon to the coalfields.

Road Vehicles Registrations.—A return just issued by the Ministry of Transport shows that the number of motor vehicles registered for the first time in January, 1934, was 30,637, compared with 20,877 in January, 1933, the figures for the several classes being:—

	January, 1934	January, 1933
Cars taxed on horse-power ..	19,691	13,576
Cycles	3,308	2,483
Hackney vehicles	243	171
Goods vehicles	6,839	4,234
Miscellaneous vehicles ..	556	413
	30,637	20,877

Copies of the return (price 3s. net) may be obtained from H.M. Stationery Office, Adastral House, Kingsway, W.C.2.

Railway Publicity in New Zealand.—The first full year of organised publicity on the New Zealand Government Railways was 1929, when expenditure upon advertising exceeded that in the previous year by over £12,000, and railway revenue increased by £181,000. In 1925 the total amount spent by the railways in advertising was only £5,000, whereas during the current financial year the total amount spent on advertising in newspapers alone will be approximately £14,000, and newspaper advertising averages about 70 per cent. of the total expenditure, the balance going in the proportion of approximately 20 per cent. for colour advertising (hoardings, signs, screens, &c.), and

10 per cent. for special railway publications and miscellaneous charges. The increased net revenue of over £200,000 already recorded in the present year may be taken as an indication of the efficiency and effectiveness of the publicity that has been put through.

Indian State Railway Dinner.—Indian State Railway Officers at home, or coming home, on leave, are asked to note that the Annual State Railway Dinner is to be held on June 4 this year, at the Café Monico, Shaftesbury Avenue. It is hoped that as many of them and of retired officers as possible will keep this date free and make a point of being present. Tickets are obtainable from Grindlay & Co. Ltd., Bankers and Agents, 54, Parliament Street, S.W.1.

National Road Safety Campaign.—In connection with the present much-needed national road safety campaign, the National Safety First Association is this week displaying throughout the country a small but striking red-and-black letterpress poster, drawing attention to the recent Home Office statement that in 1933 no fewer than 7,125 persons were killed and 216,401 injured in road accidents—" mostly," to quote the poster, " through somebody's carelessness."

Central Electricity Board and Railways.—A Bill is about to be introduced in the House of Lords to give the Central Electricity Board wider powers with regard to the supply of electricity. Clause 4 of the Bill will empower the Board to supply electricity directly to any railway company upon such terms and at such prices as may be agreed. Under the Act of 1926 the railways are on the same footing as the authorised undertakings, paying the same prices for their current as those undertakings do. The proposed new clause has given rise to considerable discussion, and to unauthoritative suggestions of large-scale developments in main-line electrification if cheap power should be obtainable by the railway companies under the powers of the Bill.

C.P.R. and Canadian Government.—Mr. E. W. Beatty, President of the Canadian Pacific Railway, has explained why it was necessary for his company to ask for a Government guarantee for a bank loan to meet its maturing obligations. Up to 1931 the company's practice was to pay for extensions, additions and improvements out of current cash, subsequently reimbursing the Treasury by issues of debenture and other stocks. In that year the depression began to be felt, and to provide for its commitments the company had to have recourse to short-term loans which matured last year. To provide for these and other obligations, the company applied in May last to a group of Canadian banks for a loan of $60,000,000 to be secured by the pledge of $100,000,000 consolidated debenture stock for a term of five years. Owing, however, to the large amount involved, the period for which it was desired, and the unsteady condition of the market, the banks required additional security, and the company thereupon undertook to apply to the Dominion Government for a guarantee. This was granted in time to enable the company to meet its obligations.

New Finnish Railway Line.—A Reuters Trade Service message from Helsingfors, dated April 5, states that the Läskelä-Pitkaränta-Ala-Uuksu line on the north-eastern shore of Lake Laatokka (Ladoga) was recently opened for traffic. The line, on which work was begun in 1929, is 57 km. long and the cost of construction amounted to 74 million marks.

Lower Swiss Fares Legalised.—A Bill to assist the Swiss tourist industry by means of a reduction in railway fares in Switzerland was adopted by the Council of States (The Upper House of the Swiss Parliament), on March 26. The Bill, which is for supplementary estimates of a million and a-half Swiss francs (nearly £100,000 at present rate of exchange), had previously been passed by the National Council, states Reuters.

New Zealand Railway Revenue.—An increase in railway revenue is announced by Mr. G. H. Mackley, General Manager of the New Zealand Railways, who states that the net revenue for the financial year ended March 31, 1934, will be about £1,000,000 compared with £850,000 in 1932-33. Mr. Mackley believes that there is a definite " back to rail " tendency, says a Reuters message from Wellington.

Nanking-Pukow Train Ferry.—In THE RAILWAY GAZETTE of December 15 last, there was an illustrated description of the Nanking-Pukow train ferry. It is interesting, therefore, to learn from the *Edgar Allen News* that the machining for this work at the works of Thomas Broadbent & Sons Ltd. was done largely with Stag Major Superweld tools. A 48-in. cast-steel barrel, 11 ft. long, for the apron lifting gear, is shown, in one of the illustrations in that journal, being turned and bored with such a tool. Other illustrations depict a Spearweld tool turning spindles in a No. 16 Herbert bar lathe, a Pearns-Richard boring machine, and an 18-in. bearing in the structure for a 7½-ton charging machine being bored with these tools.

Railway Wages Cuts.—The executives of the three railway trade unions held a joint meeting at Unity House on April 10 to consider the policy to be pursued in regard to a claim on the railway companies for the restoration of wages cuts and conditions of working. At the close of the meeting, Mr. J. Marchbank, General Secretary of the N.U.R., said that the three executives unanimously decided to make a joint effort to secure the restoration of the cuts at present in operation and also to maintain the complete operation of the negotiating machinery set up under the Railways Act of 1921. He added that the annual value of the present deductions on conditions of service with the percentage cuts in wages represented a sum of £3,660,000 per annum for the grades represented by the three unions.—[It may be pointed out that the net revenues of the four group companies together were £4,566,373 less in 1933 than in 1931—the year when the wages cuts came into operation.]

Vienna-Paris Express Derailed.—The 10.55 p.m. express from Vienna to Paris was derailed on April 10 between Linz and Wels on the Austrian Federal Railways, involving the death of the fireman and a postal servant and injuries to a number of others. It is understood that the derailment was due to malicious tampering with the track.

Railway Transport Demonstration.—A further exhibition in its series arranged to give local schoolchildren an insight into the problems of railway working, will be held by the L.N.E.R. at Hull Paragon station from April 16-28. The demonstration will embrace actual examples and models of locomotives, rolling-stock, and signalling apparatus.

Leopoldina Railway Dispute Ended.—Employees of the Leopoldina Railway were preparing to come out on strike if the negotiations proceeding between the employers and the men's representatives, in the presence of the State Governor, ended in a deadlock. Agreement was, however, reached on April 9, the terms of settlement stipulating that both parties must accept in their entirety the decisions of the commission of arbitration.

Section of Morocco-Algeria Railway Opened.—The Resident-General opened on April 11 the Fez-Taza section of the Morocco-Algeria railway, says a Reuters Trade Service message from Casablanca. Passenger traffic will begin on Sunday next, April 15. This section, 75 miles long, has 11 tunnels, the longest being 2,360 yards long, several viaducts, and bridges built with very solid foundations owing to the shifting clay soil. The estimated date of completion was 1935.

Robins Bolitho Ambulance Competition at Penzance.—The annual competition for the Robins Bolitho shield, open to Great Western Railway ambulance teams in West Cornwall, was held at Penzance on April 5, when Dr. J. G. Morgan of Liskeard acted as adjudicator. Four teams entered, and, after an interesting contest, the result was declared :—1st, Penzance—104½ marks ; 2nd, St. Ives—92 marks ; 3rd, Truro (No. 2)—90 marks ; and 4th, Truro (No. 1)—77 marks. After the competition, the guests and teams were entertained to tea by Colonel and Mrs. E. H. W. Bolitho, when among those present were the Mayor and Mayoress of Penzance (Alderman and Mrs. J. W. Meek). The Mayor complimented the

teams on their good work, and also congratulated the Penzance team on its recent achievement in winning the Frederick Winnicott shield. The Robins Bolitho shield and prizes were presented by the Mayoress. Dr. Morgan expressed himself as much pleased with the standard of work, and specially complimented Mr. R. G. Nodder, Divisional Ambulance Secretary, for his good services in connection with the ambulance movement.

Anglo-Austrian Railway Discussions.—Matters of policy are to be discussed with the British railway companies by General Carl Vaugoin, Chairman of the Austrian Federal Railways, who was expected to arrive in London on April 11. The main object of his visit is in connection with the Austrian Exhibition at the Dorland Hall, which is being opened next Monday.

More G.W.R. Halts.—A new G.W.R. halt at Trawsfynydd Lake, noted for its fishing and situated between Maentwrog Road and Trawsfynydd, will be brought into use tomorrow, April 14. All the trains on the Bala-Blaenau Festiniog branch will call at the new halt. A second halt at Birches and Bilbrook, between Codsall and Dunstall Park, will be brought into use on Monday, April 30. This halt will be served by the majority of the local trains between Wolverhampton and Wellington.

Transfer of S.M.R. Zone to Japanese Government.—An agreement was reached on April 9, between Count Hayashi, President of the South Manchuria Railway, and Mr. Ryutaro Nagai, Minister of Overseas Affairs, for the transfer of the administration of the S.M.R. zone to the Japanese Government, states a Reuters message. The railway, which has been such an important factor in the development of Manchuria, has controlled this area with marked success and has built over 120 schools, as well as hospitals, libraries, reading rooms and other public buildings out of its profits. The area affected by this important transfer totals about 108 sq. miles and, though taken over by the Japanese Government after the Russo-Japanese war in 1905, it has been controlled by the railway company which was then formed, since 1906.

A Review of Scottish Industry.—A detailed survey of the progress of Scottish industry through the slump and up to the present time was presented by Mr. G. Mills, F.S.S., M.Inst.T., Goods Manager (Southern Scottish Area), L.N.E.R., in a paper on "The Economic Position of Scotland" read before the Railway Students' Association (University of London) at the London School of Economics on April 11. Mr. W. V. Wood, Vice-President, Finance and Service Departments, L.M.S.R., and President of the Association, was in the chair. Dealing in rotation with the coal, iron and steel and textile industries and with agriculture, Mr. Mills showed that although all have been severely affected by the depression and that the markets lost through foreign competition and other factors are in some cases irrecoverable, there are possibilities of prosperity in other directions. The coal trade, for example, may expect a stimulus when the production of oil from this source has been more fully explored. In the iron and steel trade the light castings industry has suffered less severely than other branches, although an all-round improvement is discernible, 14 blast-furnaces being now in operation against three in 1931. Shipbuilding orders are also improving, and Mr. Mills expects Scotland to regain her former world supremacy in this industry. Aluminium production is well situated, owing to Scotland's suitability for hydro-electric schemes. Among textiles, jute can expect benefit from its application to road building. Mr. Mills concluded by stating that the drift of population and industries to the south is often exaggerated, and is largely compensated by the establishment of new ventures in Scotland. The vote of thanks to Mr. Mills, proposed by Mr. W. V. Wood, was seconded by Mr. C. E. R. Sherrington, Secretary of the Railway Research Service, who opened the discussion following the paper.

Railway Air Lines in South Africa

(From our own correspondent)

In THE RAILWAY GAZETTE of February 23 and March 30, brief reference was made to the acquisition by the South African Railways and Harbours Administration of the assets of the Union Airways (Pty.) Limited and the assumption of control as from February 1 of the services operated by that company.

The services will in future be known as "South African Airways (South African Railways and Harbours)," and will operate until further notice between the following points and according to the following time tables:—

SECTION: DURBAN–CAPETOWN

Durban ...	... dep.	1.0 p.m....	Thurs.
Port Elizabeth	... arr.	5.30 ,, ...	,,
Port Elizabeth	... dep.	8.0 a.m. ...	Fri.
Capetown	... arr.	11.45 ,, ...	,,
Capetown	... dep.	7.15 ,, ...	Mon.
Durban ...	... arr.	4.30 p.m....	,,

Aeroplanes stop regularly at East London in both directions and when required call at Grahamstown, Port Alfred and George. They also call regularly on the return trip at Port Elizabeth.

SECTION: DURBAN–GERMISTON.

Durban	... dep. 10.0 a.m.	} Mon., Wed.,	
Germiston	... arr. 1.0 p.m.	} and Fri.	
Germiston	... dep. 10.0 a.m.	...	Tues.
Durban	... arr. 1.0 p.m.	...	,,
Germiston	... dep. 8.0 a.m.	...	Thurs.
Durban	... arr. 11.0 ,,	...	,,
Germiston	... dep. 7.30 ,,	...	Sats.
Durban	... arr. 10.30 ,,	...	,,

The fares charged by Union Airways are for the present being maintained. These are as follow:—

	Single. £ s. d.	*Return.* £ s. d.
Durban–Germiston ...	6 10 0	12 0 0
Durban–East London ...	5 0 0	9 10 0
Durban–Port Elizabeth...	7 0 0	13 6 0
Durban–Capetown ...	13 0 0	24 14 0
East London–Port Elizabeth	3 0 0	5 14 0
East London–Capetown...	9 10 0	18 1 0
Port Elizabeth–Capetown	7 0 0	13 6 0

The aeroplanes taken over by the administration include three 4-passenger, one 5-passenger and one 6-passenger in addition to the fast single-engine six-seater machine which is being obtained to replace the plane destroyed at Eshowe. Apart from these the Administration has on order three new aeroplanes each of which will be capable of seating 18 passengers in addition to the crew of two pilots, wireless operator and steward, and will have a cruising speed of 150 m.p.h.

In introducing the railway budget in the Assembly on April 11, Mr. Pirow, Minister of Railways, said that the Government's policy was to bring all regular internal air services under railway control. He also foreshadowed the bringing of Durban within two hours, and Johannesburg within five hours of Capetown, during the next few years. He said it was hoped that Imperial Airways would decide to establish the proposed service from East Africa to Durban, East London and Capetown, in which event the Government would be prepared to consider the withdrawal of the competitive coastal service.

Questions in Parliament

Railway Fares

Mr. McEntee, on April 11, asked the Minister of Transport whether he would introduce legislation to standardise railway fares and to abolish the anomalies which arose owing to the practice of railway companies in providing cheap fares for certain minimum distances; whether he was aware, for instance, that on the Metropolitan Railway the fare from Baker Street to North Harrow was 2s. 4d., whereas the fare to one station beyond was only 1s. 3d.; and that the company refused to permit a person holding a 1s. 3d. ticket to alight at North Harrow except on payment of extra fare.

Mr. Stanley: The practice of issuing cheap return tickets between specified stations on certain days of the week is one which has been generally adopted by the railway companies in the exercise of their commercial discretion and as a means of attracting additional traffic. The Railway Rates Tribunal has jurisdiction over railway fares in the London Passenger Transport Area, and I see no need for further legislation on the subject.

OFFICIAL NOTICES

South Indian Railway Company Limited.

THE Directors are prepared to receive Tenders for the supply of :—

1.—METALS.
2.—COPPER RODS AND TUBES, &c.
3.—STEEL BARS, SECTIONS AND CORRUGATED SHEETS.

Specifications and Forms of Tender will be available at the Company's Offices, 91, Petty France, Westminster, S.W.1.

Tenders, addressed to the Chairman and Directors of the South Indian Railway Co. Ltd., marked "Tender for Metals," or as the case may be, with the name of the firm tendering, must be left with the undersigned not later than 10 a.m. on Friday, the 20th April, 1934, in respect of Specification No. 1, and not later than 10 a.m. on Friday, the 27th April, 1934, in respect of Specifications Nos. 2 and 3.

The Directors do not bind themselves to accept the lowest or any Tender.

A charge, which will not be returned, will be made of 10s. for each copy of Specification No. 1 and of 5s. for each copy of Specifications Nos. 2 and 3.

Copies of the drawings may be obtained at the Offices of the Company's Consulting Engineers, Messrs. Robert White & Partners, 3, Victoria Street, Westminster, S.W.1.

A. MUIRHEAD,
Managing Director.

91, Petty France,
Westminster, S.W.1.
11th April, 1934.

Rio Tinto Co. Ltd.

NOTICE IS HEREBY GIVEN that the Sixty-first Ordinary General Meeting of the Shareholders will be held at Southern House (formerly Cannon Street Hotel), Cannon Street, in the City of London, E.C., on Thursday, the 19th April, 1934, at Twelve o'clock noon precisely, for the purpose of receiving the Directors' Report and Statement of Accounts, for the Declaration of a Dividend and for other purposes.

Holders of Share Warrants to bearer who desire to attend can receive a Ticket of admission, on depositing their Warrants in accordance with the Articles of Association three days prior to the Meeting, at the Company's Offices in London.

The retiring Directors are G. W. Gray, Esq., and J. Gordon Macleod, Esq., who, being eligible for re-election, offer themselves accordingly.

The retiring Auditors are Messrs. Turquand, Youngs & Co., who, being eligible for re-appointment, offer themselves accordingly.

The Transfer Books will be closed from Friday, the 20th, to Monday, the 30th April, both days inclusive.

By order of the Board,
R. H. BEECHER,
Secretary.

Offices of the Company,
3, Lombard Street, London, E.C.
10th April, 1934.

THE Proprietor (Armand Juneau) of Patent No. 356,735, which relates to the drive of auxiliary apparatus on railway vehicles, is desirous of entering into arrangements for commercial exploitation of his invention. Parties interested are requested to communicate with him at 285, High Holborn (1st floor), London, W.C.1.

PATENTS for Inventions, Trade Marks, Advice, Handbook, and consultations free. King's Patent Agency, Ltd. (B. T. King, C.I.M.E., Registered Patent Agent, G.B., U.S., and Canada), 146a, Queen Victoria Street, London, E.C.4. 49 years' references. 'Phone City 6161.

Universal Directory of Railway Officials and Railway Year Book

39th Annual Edition, 1933-34.

Price 20/- net.

This unique publication gives the names of all the principal railway officers throughout the world, together with essential particulars of the systems with which they are connected. Much general and statistical information about railways is also concisely presented.

THE DIRECTORY PUBLISHING CO. LTD.,
33, Tothill Street, London, S.W.1.

CONTRACTS AND TENDERS

H. Lees & Co. Ltd. has secured an order from the L.N.E.R. for a 250-ton electrically operated coaling plant for Norwich.

The Horsehay Co. Ltd. has secured contracts from the L.N.E.R. for the supply and delivery of steelwork for the reconstruction of a portion of the flooring and new smoke-plates for White Lee Road overbridge, near Mexborough Junction, on the L.M.S.R. and L.N.E.R. Swinton and Knottingley Joint Line, and also for the reconstruction of an underline bridge between Witham and Kelvedon.

The Great Western Railway Company's directors have authorised the placing of the following contracts :—

Supply of seven low-loading trailers for the road conveyance of cattle : The Harrow Industrial Co. Ltd., Harrow.

Supply and erection of two 2-ton electric goods lifts at the new Stationery Department building, Westbourne Terrace, Paddington : Wm. Wadsworth Limited, Bolton.

Provision of automatic inter-communication telephones at Bristol (Temple Meads) station : The General Electric Co. Ltd., London.

Rewinding of motor converters at Old Oak Common substation : The Westminster Engineering Company, London.

Supply of five standard ram pumps : The Uskside Engineering Company, Newport.

Provision of dispense bar at Tregenna Castle Hotel : Fortnum & Mason Limited, London.

At the Company's Swindon works : Supply of three special self-centring faceplate chucks for a wheel-boring lathe : Craven Bros. (Manchester), Reddish.

Supply of two Valiant pumps : Farrow & Sons Ltd., Spalding.

Supply of an automatic screw machine : A. Butterworth & Co. Ltd., Rochdale.

The L.N.E.R. has placed contracts with the following firms for a total of 37,000 tons of steel rails : Dorman Long & Co. Ltd., the Cargo Fleet Iron Co. Ltd., Skinningrove Iron Co. Ltd., Barrow Hæmatite Steel Company, S. Fox & Co. Ltd., the Lancashire Steel Corporation Limited, Colvilles Limited, the Steel Company of Scotland Limited, the Sheldon Iron & Steel Company, and the Consett Iron Co. Ltd.

The British Thomson-Houston Co. Ltd. has secured a contract from the L.N.E.R. for the supply of Mazda lamps for the ensuing twelve months.

The Metropolitan-Vickers Electrical Co. Ltd. has secured a part contract from the L.N.E.R. for the supply of Cosmos electric lamps for a period of twelve months ending April 30, 1935.

The South African Railways and Harbours Administration has recently placed orders as follow :—

Dorman Long & Co. Ltd. : Fishplates, enlarged, price, £7,761 3s. 2d., and fishplates, price, £24,715 4s. 0d.

Pease & Partners : Cast-iron chairs, price, £18,883 6s. 8d.

Guest, Keen & Nettlefolds : Rolled steel keys, price, £1,867 10s. 0d.

Head Wrightson & Co. : Cast-iron brake blocks, price, 3,375.

The General Electric Co. Ltd. has received an order from the London Passenger Transport Board for 50 240-h.p. electric motors for additional motor coaches for service on the Piccadilly Line. These motors are to be duplicates of the large number already supplied by the General Electric Co. Ltd., for use on the London Underground Railways. Reference was made in this column in the issue of THE RAILWAY GAZETTE for March 23 to the fact that the L.P.T.B. had ordered 26 new motor coaches from the Metropolitan-Cammell Carriage, Wagon & Finance Co. Ltd., and that the General Electric Company's electrical gear would be used. A note was also included in this column last week to the effect that The British Thomson-Houston Co. Ltd. is to supply 26 electric control equipments and motor-driven compressors for this new stock.

Leyland Motors Limited has recently received an order from East Yorkshire Motor Services Limited for four further Titan double-decked omnibuses.

The Patent Shaft & Axletree Co. Ltd. has secured a contract from the L.N.E.R. for the reconstruction of the superstructure of the bridge carrying the junction sidings near Artillery Street, Spitalfields Depot.

Alfol Insulation Limited has secured orders for Alfol insulation to be used for the boilers of twenty 2-6-0 locomotives which, as recorded in the issue of THE RAILWAY GAZETTE for February 23, on page 313, have been ordered in equal numbers by the L.N.E.R. from Robert Stephenson & Co. Ltd., and Sir W. G. Armstrong Whitworth & Co. (Engineers) Ltd.

The Chief Controller of Stores, Indian Stores Department, New Delhi, has recently placed orders as follow :—

The Associated Electrical Industries (India) Limited, Calcutta : One portable arc welding set to be supplied by Metropolitan-Vickers Limited. Price Rs. 5,052, free delivery Jamalpur.

Greaves, Cotton & Co. Ltd., Bombay : One air compressor set to be supplied by the Consolidated Pneumatic Tool Co. Ltd. and fitted with Crompton 40-h.p. motor, price Rs. 4,318, free delivery Ambala Cantonment ; and two Ruston oil engines, price Rs. 3,173 each, f.o.r. Peshawar and Nowshera.

Macbeth Bros. & Co. Ltd., Bombay : One Gardner 28½-h.p. compression-ignition oil engine, price Rs. 7,130, free delivery Bombay.

J. Stone & Co. (India) Ltd., Calcutta : Five sets of 24 cells lead acid accumulators, Tonum cells, price Rs. 6,720, free delivery Storespura.

Ingersoll-Rand (India) Limited, Calcutta : One air lift cum centrifugal pumping plant with Crossley Bros. 44-h.p. oil engine and compressor, Ingersoll-Rand air compressor and Mather & Platt Lanovane centrifugal pump, price Rs. 10,876, free delivery Pad Idan, N.W. Railway.

Jessop & Co. Ltd. has secured an order from the Indian Stores Department, New Delhi, for one Barford &

Perkins diesel-engined roller at a price of Rs. 10,495 free delivery Bareilly station.

The Agent, North Western Railway of India, Lahore, invites tenders on a rupee basis for the supply of split steel cotters, split pins and set screws.

The Agent, G.I.P. Railway, Victoria Terminus, Bombay, invites tenders, receivable by May 2, for 175 cast-steel locomotive axleboxes.

Pneulec Limited has received an order for two pneumatic Royer sand riddlers from the Buenos Ayres Great Southern Railway.

Wild Barfield Electric Furnaces Limited has received an order from the Buenos Ayres Great Southern Railway for two tool-hardening furnaces.

T. Robinson & Son Ltd. has received an order for one band re-sawing machine and one automatic plane iron grinding machine from the Leopoldina Railway.

Edgar Allen & Co. Ltd. has received an order from the Leopoldina Railway for a crossing in cast manganese steel, comprising four curved single metre-gauge rail tracks crossing two straight single tramway tracks of 4-ft. 8½-in. gauge.

The Churchill Machine Tool Co. Ltd. has received orders from the Buenos Ayres Great Southern Railway for machine tools as follow :—One universal grinding machine ; one double-ended grinding and quartering machine and one axle journal re-grinding machine.

J. Pickles & Son Ltd. has received orders from the Leopoldina Railway for woodworking machinery as follow :—One horizontal log band saw, one plain circular saw table, one planing and moulding machine, one automatic band-saw sharpening machine, one cutter grinder and one pendulum cross cut saw.

H.M. Senior Trade Commissioner in South Africa reports that the South African Railways and Harbours Administration is calling for tenders, to be presented in Johannesburg by May 7, for the supply of steel axles and tyres. Firms desirous of offering materials of United Kingdom manufacture can obtain the further details of this call for tenders from the Department of Overseas Trade.

In recent communications to the Department of Overseas Trade, the Commercial Counsellor to H.M. Embassy in Moscow has made the suggestion that United Kingdom firms should accord consideration to the question of forwarding trade literature to the various State-owned industrial combines and trusts, factories and technical bureaux in the U.S.S.R., and in that connection he has compiled lists of such organisations in relation to fifteen industries. Among them are lists of organisations in the railway and road transport, metal construction and metal working, iron and steel and electrical industries. Further details regarding the matter, together with copies of the lists referred to which have been classified according to commodity, can be obtained by United Kingdom firms from the Department of Overseas Trade.

Charles Roberts & Co. Ltd. has received an order from the Crown Agents for the Colonies for three 30-ton bogie tank wagons for the Palestine Railways.

German Orders

The award of contracts for railway carriages and equipment to the value of 29,400,000 marks has been decided upon by the German Reichsbahngesellschaft (State Railway Company), according to the *Deutsche Bergwerks Zeitung*. Of this total 12,200,000 marks represent equipment, so that the carriage industry will receive orders valued at 17,200,000 marks. Following the distribution of contracts for 53 locomotives valued at 8,500,000 marks at the end of February, it is now announced that additional orders for 21 units will be placed consisting of heavy express, passenger and goods locomotives ; the value of these supplementary orders is about 2,500,000 marks.

The Egyptian State Railways Administration has recently placed orders as follow :—

John Spencer Limited : Mild-steel tees and tubes (Ref. No. E.S.R. 17.37). Price £298 17s. 10d., delivery f.o.b. London-Liverpool. Eight offers received.

Ericsson Telephones Limited (Items Nos. 1 and 2, at total cost £1,492 delivered f.o.b. British port) and Standard Telephones & Cables Limited (Items Nos. 3–7, at total cost of £2,550 delivered f.o.b. London) : Switchboards for automatic exchange (Ref. No. E.S.R. 34.127). Five offers received.

Siemens Bros. & Co. Ltd. : Automatic telephone sets (Ref. No. E.S.R. 34.126). Price £7,946 17s. 6d. for delivery f.o.b. London. Five offers received.

P. & W. MacLellan Limited : Mild-steel round (Ref. No. E.S.R. 1.103). Price £408 16s., delivered f.o.b. Glasgow or Middlesbrough. Nine offers received. Also copper ingots (Ref. No. E.S.R. 6.46). Price £1,337 12s., delivery f.o.b. Liverpool-Glasgow. Four offers received.

Pilkington Bros. Ltd. : Glass panes (Ref. No. E.S.R. 46.26). Price £536 8s. 3d., delivered free Gabbary Quay and insured to Cairo.

Walter's Electrical Manufacturing Co. Ltd. (Item 1, cost £318 15s., c.i.f. African port), The General Electric Co. Ltd. (Items 2 and 4, cost £37 2s., delivery f.o.b. U.K. port), and Primary Batteries Limited (Items 3, 5 to 8, total cost £1,395 10s., delivery f.o.b. London) : Battery materials (Ref. No. E.S.R. 34.141). Ten offers received.

The Crown Agents for the Colonies have recently placed the following orders. In several instances more extended reference has already been made to them in this column :—

Kendall & Gent (1920) Limited : Broaching machine.
Anti-Attrition Metal Co. Ltd. : Axlebox bearings and brasses.
Callender's Cable & Construction Co. Ltd. : E.H.T. line materials.
Stanton Ironworks Co. Ltd. : Cast-iron pipes and fittings.
Stewarts and Lloyds Limited : Pipework.
Worthington Simpson Limited : Pump bodies.
Cargo Fleet Iron Co. Ltd. : Rails and fishplates.
Barford & Perkins Limited : Road roller.
Chloride Electrical Storage Co. Ltd. : Spares for Lux cells.
P. & W. McLellan Limited : Steel.
Wolverhampton Corrugated Iron Co. Ltd. : Corrugated steel sheets.
Dorman Long & Co. Ltd. : Constructional steelwork.
F. Morton & Co. Ltd. : Steelwork.
Ferguson Pailin Limited : Substation switchgear.
H. W. Kearns & Co. Ltd. : Surfacing, boring, milling, drilling and tapping machine.
British Insulated Cables Limited : Telephone cable.
J. Stone & Co. Ltd. : Train lighting equipment and white-metal ingots.
Taylor Bros. & Co. Ltd. : Carriage and wagon tyres.
English Steel Corporation Limited and Steel, Peech & Tozer Limited : Locomotive tyres.
British Mannesmann Tube Co. Ltd. : Weldless steel tubing.

G.W.R. Holiday Posters

Many hoardings on the Great Western Railway system have recently been enriched by a trio of coloured posters, each of which is calculated to charm the eye as well as fire the imagination of the travelling public. One of these, perhaps the most striking of the three, depicts a street scene in historic Totnes, in Devonshire—a street with a mediæval aspect, but full of the life and movement of modernity and a sunny "note" about it which, we feel sure, will be widely appreciated. The picture is the work of Mr. Claude Buckle, who may be complimented on its all-round excellence. The remaining posters take the form of maps of Devon and Cornwall, in which, alongside the various place-names, clever and amusing little pictures and sketches of local interest are introduced. Thus, we are reminded that Sir Walter Raleigh was born at E. Budleigh, and there is a fine head of that immortal Devonian to emphasise the fact. Buckfast Abbey, built by six monks, shows one of those sturdy brethren ; whilst the Dartmoor region is appropriately indicated by a hiker of masculine breed. On the left, the map is flanked by the arms of five of the leading Devon towns, and on the opposite top corner there is a neat tablet, devoted to important local data. The map of Cornwall—land of legend, history and romance—is similarly treated, save that instead of the armorial bearings aforesaid there is a collection of portraits of Royal and other worthies—King Arthur, for example—who have left their mark on the delectable duchy. The various character sketches in this map are, if anything, even more amusing than those in the other. One of the quaintest is, perhaps, that attached to St. Kew, the trysting place of a particularly operatic-looking Tristram and Iseult. Both posters, which bear the name J. P. Sayer, show the G.W.R. monogram and the respective arms of Devon and Cornwall.

Forthcoming Events

Apr. 13 (*Fri.*).—Institute of Transport (Newcastle), at Royal Station Hotel, 7.30 p.m. Annual General Meeting. "Passenger Transport Policy," by Mr. C. A. Hopkins.
Railway Club, 57, Fetter Lane, London, E.C.4, 7.30 p.m. "The London Chatham & Dover Railway," by Mr. C. N. Anderson.
Apr. 14 (*Sat.*).—Permanent Way Institution (Manchester - Liverpool), at Temperance Inst., Southport, 3 p.m. "The Work of a Bridge Repair Gang," by Mr. R. D. Gauld.
Apr. 16 (*Mon.*).—Wimbledon and District Model Railway Club, Locomotive Hall, Wimbledon Hill, London, S.W.19. "Railways of the Irish Free State," by Mr. A. W. Croughton.
Stephenson Locomotive Society (Scottish). Visit to Cowlairs Works and Eastfield Running Shed, L.N.E.R.
Apr. 17 (*Tues.*).—Institute of Transport (London), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 6 p.m. "Transport Developments in 1933," by Mr. R. Bell.
Institution of Railway Signal Engineers, at Railway Inst., Derby, 6 p.m. "Single Line Switching Out Problems," by Mr W. S. Roberts.

British and Irish Railway Traffic Returns

GREAT BRITAIN	Totals for 14th Week			Totals to Date		
	1934	1933	Inc. or Dec.	1934	1933	Inc. or Dec.
	£	£	£	£	£	£
L.M.S.R. (6,941¾ mls.)						
Passenger-train traffic	423,000	422,000	+ 1,000	5,433,000	5,147,000	+ 286,000
Merchandise, &c.	388,000	443,000	− 55,000	6,114,000	5,598,000	+ 516,000
Coal and coke	186,000	223,000	− 37,000	3,695,000	3,574,000	+ 121,000
Goods-train traffic	574,000	666,000	− 92,000	9,809,000	9,172,000	+ 637,000
Total receipts	997,000	1,088,000	− 91,000	15,242,000	14,319,000	+ 923,000
L.N.E.R. (6,339 mls.)						
Passenger-train traffic	282,000	275,000	+ 7,000	3,527,000	3,389,000	+ 138,000
Merchandise, &c.	276,000	289,000	− 13,000	4,403,000	3,867,000	+ 536,000
Coal and coke	190,000	201,000	− 11,000	3,446,000	3,186,000	+ 260,000
Goods-train traffic	466,000	490,000	− 24,000	7,849,000	7,053,000	+ 796,000
Total receipts	748,000	765,000	− 17,000	11,376,000	10,442,000	+ 934,000
G.W.R. (3,750 mls.)						
Passenger-train traffic	188,000	185,000	+ 3,000	2,269,000	2,180,000	+ 89,000
Merchandise, &c.	149,000	178,000	− 29,000	2,431,000	2,231,000	+ 200,000
Coal and coke	67,000	100,000	− 33,000	1,522,000	1,512,000	+ 10,000
Goods-train traffic	216,000	278,000	− 62,000	3,953,000	3,743,000	+ 210,000
Total receipts	404,000	463,000	− 59,000	6,222,000	5,923,000	+ 299,000
S.R. (2,177 mls.)						
Passenger-train traffic	272,000	266,000	+ 6,000	3,411,000	3,219,000	+ 192,000
Merchandise, &c.	45,000	59,500	− 14,500	829,000	804,500	+ 24,500
Coal and coke	21,000	22,500	− 1,500	503,000	480,500	+ 22,500
Goods-train traffic	66,000	82,000	− 16,000	1,332,000	1,285,000	+ 47,000
Total receipts	338,000	348,000	− 10,000	4,743,000	4,504,000	+ 239,000
Liverpool Overhead (6½ mls.)	1,175	1,103	+ 72	15,132	14,501	+ 631
Mersey (4½ mls.)	4,658	3,855	+ 803	59,405	55,585	+ 3,820
*London Passenger Transport Board	536,800	—	—	19,976,500	—	—
IRELAND						
Belfast & C.D. pass. (80 mls.)	3,378	1,967	+ 1,411	25,876	24,099	+ 1,777
,, ,, goods	503	484	+ 19	7,444	7,264	+ 180
,, ,, total	3,881	2,451	+ 1,430	33,320	31,363	+ 1,957
†Great Northern pass. (562 mls.)	12,450	1,400	+ 11,050	106,050	44,100	+ 61,950
,, ,, goods	6,550	1,550	+ 5,000	113,750	43,950	+ 69,800
,, ,, total	19,000	2,950	+ 16,050	219,870	88,050	+ 131,750
Great Southern pass. (2,158 mls.)	26,242	21,471	+ 4,771	269,571	253,574	+ 15,997
,, ,, goods	30,940	35,532	− 4,592	444,147	437,971	+ 6,176
,, ,, total	57,182	57,003	+ 179	713,718	691,545	+ 22,173

Easter Monday Week, 1934. * 40th Week. † Strike 1933.

L.N.E.R. NORTH-EASTERN AREA FINAL AMBULANCE COMPETITION.—Ambulance teams, representing the six districts of the North Eastern Area Centre of the St. John Ambulance Association, competed in the final competition for the "Wharton Shield" at Gateshead-on-Tyne on Saturday, March 24. The results of the competition were announced by Mr. S. Cooper, the recently appointed Centre Ambulance Secretary, as follow:—

Result	Team	Marks obtained		
		Stretcher max. marks 200	Individual 250	Total 450
1	Newcastle (Tyne Dock)	156	128½	284½
2	Hull (Dairycoates)	129½	127½	257
3	Leeds (Police)	104½	134½	239
4	York (Police)	108	129	237
5	Darlington (Yard Master's)	97½	105½	203
6	Middlesbrough (Station No. 2)	72½	102½	175

The ambulance competition included both "individual" and "team" tests, and Dr. F. E. Bendix, of Ilford, who acted as judge, congratulated the teams on their efficiency and the excellence of the work performed. The chair was taken by Mr. J. Willis, signalman, Hesleden, who is the present chairman of the Centre.

The "Wharton Shield" and medals were presented to the winning team by Mr. Thos. Hornsby, Divisional General Manager, North Eastern Area, York, and president of the Centre, who spoke in high terms of the work of the late Mr. George Jackson, and said that in Mr. Sidney Cooper they had secured an admirable successor. At the close, Dr. J. G. McBride, Chairman of the Company's All-Line Special Ambulance Committee, proposed a vote of thanks to Mr. Hornsby.

SUGAR-BEET SEASON, 1933-34.—The preliminary figures now available for the L.N.E.R. sugar-beet season 1933-34, which has just closed, show that the company carried 1,206,522 tons of sugar beet as compared with 904,826 tons during the previous season.

British and Irish Railway Stocks and Shares

Stocks	Highest 1933	Lowest 1933	Prices Apl. 11 1934	Prices Rise/Fall
G.W.R.				
Cons. Ord.	55½	31	57	−2½
5% Con. Prefce.	109¾	69½	110½	−1
5% Red.Pref.(1950)	109¼	87½	109½	−1
4% Deb.	108 15/16	99¼	109	+½
4½% Deb.	108	100¾	110½	—
4½% Deb.	116	106	117½	—
5% Deb.	128	117¼	128½	—
2½% Deb.	65	60	68½	—
5% Rt. Charge	124	111½	126½	—
5% Cons. Guar.	122	103	123½	—
L.M.S.R.				
Ord.	29⅞	12⅛	26½	−1½
4% Prefce. (1923)	51	17	56	−3
4% Prefce.	72	33¼	79½	−1½
5% Red. Prf. (1955)	93	47¼	99	—
4% Deb.	103¼	89½	103½	—
5% Red.Deb.(1952)	114	105	113½	—
4% Guar.	97¼	68⅜	98½	−1
L.N.E.R.				
5% Pref. Ord.	22½	7¾	19¾	−1½
Def. Ord.	10¾	4⅛	9⅞	−5/16
4% First Prefce.	65½	19⅜	67	−2
4% Second Prefc.	40½	12¼	39	−2½
5% Red.Pref.(1955)	83¾	27	88½	−1
4% First Guar.	94¾	58¼	95½	−½
4% Second Guar.	89¼	48	90½	−½
3% Deb.	77	60¼	79	—
4% Deb.	02¾	80	103	—
5% Red.Deb.(1947)	112	102½	108½*	−2
4½% Sinking Fund Red. Deb.	107½	98¾	106½	—
SOUTHERN				
Pref. Ord.	71	27¾	79	−3
Def. Ord.	24⅜	9⅜	27½	−2
5% Prefce.	107 11/16	74	110½	—
5% Red.Pref.(1964)	107¾	78⅞	111½	—
5% Guar. Prefce.	124¼	102¾	124½	—
5% Red.Guar.Pref. (1957)	115⅝	103½	114½	—
4% Deb.	107½	96¾	105½	—
5% Deb.	126½	114¼	126½	—
4% Red. Deb. 1962–67	107¼	100	106½	—
BELFAST & C.D.				
Ord.	6	4	5	—
FORTH BRIDGE				
4% Deb.	99½	95½	101½	+1
4% Guar.	98½	94	101½	+1
G. NORTHERN (IRELAND)				
Ord.	7½	3½	5	—
G. SOUTHERN (IRELAND)				
Ord.	28	16	20	−4½
Prefce.	24	12⅛	19	—
Guar.	42	16¾	46½	+2⅝
Deb.	60	30⅞	64½	−1½
L.P.T.B.				
4½% "A"	117⅞	112	118½	—
5% "A"	127¼	119¼	127	—
4½% "T.F.A."	111¼	106	109½	—
5% "B"	122½	114	120½	—
"C"	86⅝	74½	78½	—
MERSEY				
Ord.	16¼	5	13	—
4% Perp. Deb.	83	63⅞	86½	—
3% Perp. Deb.	62	51	65½	—
3% Perp. Prefce.	50⅝	27	51½	+1

* ex-dividend.

Railway Share Market

In the stock and share markets Home railway stocks have been under the shadow of the discussions regarding wages. The prominence given in the popular newspapers to claims of the railway employees has had an adverse influence on holders who have been disposed to part with stock. In the Stock Exchange there is no inclination to change the favourable views which have been held recently of the prospects.

Scope for appreciation is now probably larger in home railway stocks than in any other part of the Stock Exchange. Whilst dividend payments are not at present being looked for on such stocks as the London & North Eastern preferred or deferred ordinary, London Midland & Scottish ordinary and possibly only a modest return on the Southern deferred stock, there is nevertheless every expectation of sufficient progress being made this year to bring the stocks nearer to dividend resumption. The suggestion that dealers should approach the Committee with a view to quoting stock in units of £1 is again being made. It is estimated that the public would show greater interest in the stocks if they were enabled to compare quotations with leading industrial stocks now largely quoted in units of £1. On a quotation on these lines Great Western ordinary would be about 11s. per £1 unit, L.M.S. ordinary about 6s. per £1 unit, L. & N.E. preferred ordinary about 4s. per £1 unit, the deferred about 2s. per unit, and Southern deferred about 6s. per £1 unit. London Transport "C" stock has shown a fractional recovery this week. In foreign railway stocks the Argentine issues hardened on the news of the Government's intention to redeem certain external loans which may release more sterling exchange for the railway companies. Aguas Blancas 4½ per cent. first debenture was put up two points to 85-90, but there have been no dealings this month, the last bargain having been 83 on the 29th ult. Dorada ordinary stock was increased 1½ points to 29-34, with several markings of business on Monday at 30.

Leopoldina terminal debentures fell two points to 76-80, but no business was recorded. Barranquilla shares have been changing hands at around 4s. 6d. for the £1 shares (17s. 6d. paid). Their value depends largely on U.S. dollar exchange. As reflecting the inanition in foreign railway stocks, there has been no business recorded in any Salvador issues this year. Another interesting record is the gradual increase in Puerto Cabello and Valencia 5 per cent. first charge bonds to 17-21, as against the last transaction recorded on April 18 last year, when business was done at 6.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1933–34	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1933	No. of Week	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1933	Prices: Lowest 1933	Prices: Apl., 11 1934	Yield % (See Note)
				£	£		£	£	£					
South & Central America.	Antofagasta (Chili) & Bolivia	830	8.4.34	11,020	+ 2,370	14	178,610	130,310	+ 48,300	Ord. Stk.	26	11⅝	23	Nil
	Argentine North Eastern..	753	7.4.34	11,400	+ 2,900	40	406,700	429,200	— 22,500	,,	14½	5	8½	Nil
	Argentine Transandine ..	111		—	—	—	—	—	—	A. Deb.	55	40	50	8
	Bolivar	170	Mar., 1934	7,700	— 950	13	20,650	23,850	— 3,200	6 p.c. Db. Bonds.	10	5	10	Nil
	Brazil	—		—	—	—	—	—	—		15	11	13	3⅞
	Buenos Ayres & Pacific ..	2,806	7.4.34	139,000	+ 6,000	40	4,273,000	4,361,000	— 88,000	Ord. Stk.	26	9⅞	13½	Nil
	Buenos Ayres Central ..	190	1.4.34	6,067	— 2,095	40	376,615	361,825	+ 14,790	Mt. Db.	30	10	25½	Nil
	Buenos Ayres Gt. Southern	5,085	7.4.34	230,000	— 10,000	40	8,119,000	8,122,000	— 3,000	Ord. Stk.	44½	21½	30½	Nil
	Buenos Ayres Western ..	1,926	7.4.34	92,000	+ 20,000	40	2,640,000	2,692,000	— 52,000	,,	34½	15⅝	24	Nil
	Central Argentine ..	3,700	7.4.34	‡178,000	+ 5,000	40	6,614,000	7,289,000	— 675,000	,,	28½	15	20	Nil
	Do. ..	—		—	—	—	—	—	—	Dfd.	18	10	12½	Nil
	Cent. Uruguay of M. Video	273	7.4.34	18,756	+ 2,890	40	657,709	611,814	+ 45,895	Ord. Stk.	20	8	15	Nil
	Do. Eastern Extn.	311	7.4.34	4,073	+ 1,026	40	132,605	131,928	+ 677		—	—	—	—
	Do. Northern Extn.	185	7.4.34	3,133	+ 1,084	40	73,242	78,113	— 4,871		—	—	—	—
	Do. Western Extn.	211	7.4.34	1,269	+ 73	40	65,918	54,608	+ 11,310		—	—	—	—
	Cordoba Central	1,218	7.4.34	40,000	+ 5,000	40	1,640,000	1,628,000	+ 12,000	Ord. Inc.	9¼	2½	4½	Nil
	Costa Rica	188	Nov., 1933	18,534	— 3,195	21	99,724	107,788	— 8,064	Stk.	29	20	26	7¹¹⁄₁₆
	Dorada	70	Feb., 1934	10,300	+ 4,500	8	22,000	13,600	+ 8,400	1 Mt. Db.	76½	68¾	95	6¹⁵⁄₁₆
	Entre Rios	810	7.4.34	14,900	+ 3,700	40	622,800	607,300	+ 15,500	Ord. Stk.	26½	9	17½	Nil
	Great Western of Brazil ..	1,082	7.4.34	7,300	— 1,700	14	137,200	195,600	— 58,400	Ord. Sh.	23/6	1/2	5/4	Nil
	International of Cl. Amer.	794	Feb., 1934	$509,640	+ $74,295	8	$970,373	$865,255	+ $105,118		—	—	—	—
	Interoceanic of Mexico ..	—		—	—	—	—	—	—	1st Pref.	½	1/16	1⅛	Nil
	La Guaira & Caracas ..	22¾	Mar., 1934	3,700	— 4,425	13	11,280	21,365	— 10,085	Stk.	16	10	12½	Nil
	Leopoldina	1,918	7.4.34	24,490	+ 4,173	14	327,848	355,189	— 27,341	Ord. Stk.	20¼	10	11	Nil
	Mexican	483	7.4.34	$189,600	— $30,900	14	$3,127,100	$2,537,900	+ $589,200	,,	3	½	2⅛	Nil
	Midland of Uruguay ..	319	Mar., 1934	9,523	+ 409	39	87,516	77,061	+ 10,455	Ord. Stk.	2	1	1½	Nil
	Nitrate	411	31.3.34	21,524	+ 17,479	13	86,292	25,759	+ 60,533	Ord. Sh.	7/6	1/16	3/6	Nil
	Paraguay Central	274	7.4.34	3,610	+ 520	40	128,530	108,410	+ 20,120	Pr. Li. Stk.	72	49½	71	8⅞
	Peruvian Corporation ..	1,059	Mar., 1934	66,977	+ 22,000	39	506,929	485,536	+ 21,393	Pref.	15¼	5	13⅝	Nil
	Salvador	100	31.3.34	2,391	— 1,548	40	55,785	114,567	— 58,782	Pr. Li. Db.	70	66½	70	7⅛
	San Paulo	153½	1.4.34	33,919	— 10,020	13	377,464	400,332	— 22,868	Ord. Stk.	102	68	80	2½
	Taltal	164	Mar., 1934	10,565	+ 4,795	39	56,780	33,985	+ 22,795	Ord. Sh.	15¼	¾	15⅜	6⅛
	United of Havana.. ..	1,365	7.4.34	31,290	— 4,603	40	743,490	770,468	— 26,978	Ord. Stk.	8	2	5	Nil
	Uruguay Northern ..	73	Mar., 1934	1,155	+ 92	39	10,546	13,693	— 3,147	Deb. Stk.	6	3½	5	Nil
Canada.	Canadian National ..	23,750	31.3.34	975,619	+ 156,425	13	7,473,288	6,115,605	+1,357,683	—	—	—	—	—
	Canadian Northern ..	—	—	—	—	—	—	—	—4 p.c.	Perp. Dbs.	60½	38	68	5⅞
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	99¾	85	99½	4
	Canadian Pacific	17,018	7.4.34	435,000	+ 66,600	14	5,932,400	5,083,000	+ 849,400	Ord. Stk.	22⅛	11	17	Nil
India.†	Assam Bengal	1,329	10.3.34	31,065	+ 5,795	49	1,196,232	1,189,857	+ 6,375	Ord. Stk.	79	70	77½	3⅞
	Barsi Light..	202	17.3.34	2,580	+ 300	50	142,245	137,197‡	+ 5,048	Ord. Sh.	10¹⁵⁄₁₆	70	100½	5¹³⁄₁₆
	Bengal & North Western..	2,113	17.3.34	51,015	+ 3,139	29	1,125,812	1,163,227	— 37,415	Ord. Stk.	292	240	273	5⅞
	Bengal Dooars & Extension	161	17.3.34	2,184	+ 138	50	145,086	142,736	+ 2,350	,,	127	119	125§	5⅝
	Bengal-Nagpur	3,269	10.3.34	106,200	— 646	49	5,305,606	4,852,850	+ 452,756	,,	97¼	83½	100½	3¹⁵⁄₁₆
	Bombay, Baroda & Cl. India	3,089	31.3.34	162,300	— 9,225	52	8,025,675	7,707,450	+ 318,225	,,	112	107	111¼	5⅝
	Madras & South'n Mahratta	3,230	10.3.34	122,775	+ 3,881	49	5,355,490	5,164,820	+ 190,670	,,	127	114¼	124½	7¼
	Rohilkund & Kumaon ..	572	17.3.34	14,012	+ 2,292	29	242,069	226,968	+ 15,101	,,	260	225	251	6
	South India	2,526	17.3.34	75,106	— 6,962	50	3,871,749	3,975,767	— 104,018	,,	119½	112	117½	6¹³⁄₁₆
Various.	Beira-Umtali	204	Jan., 1934	45,442	+ 7,575	17	194,466	154,575	+ 39,891	—	—	—	—	—
	Bilbao River & Cantabrian	15	Mar., 1934	2,719	+ 1,180	13	5,962	3,532	+ 2,430	—	—	—	—	—
	Egyptian Delta	621	20.3.34	5,932	— 29	51	229,981	250,751	— 20,770	Prf. Sh.	1³¹⁄₃₂	15⅛	2	Nil
	Great Southern of Spain ..	104	31.3.34	1,413	— 400	13	27,410	28,482	— 1,072	Inc. Deb.	4	3	5½	Nil
	Kenya & Uganda	1,625	Aug., 1933	159,746	+ 12,456	35	1,523,550	1,273,216	+ 250,334	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	53	33½	44½	7⅞
	Mashonaland	913	Jan., 1934	82,678	+ 25,102	17	359,731	235,930	+ 123,801	1 Mg. Db.	91¼	42	94½	5¼
	Midland of W. Australia ..	277	Feb., 1934	12,965	+ 445	34	108,714	104,268	+ 4,446	Inc. Deb.	89	70	96½	4⅛
	Nigerian	1,903	24.2.34	39,208	+ 1,152	48	1,640,215	1,695,611	— 55,396	—	—	—	—	—
	Rhodesia	1,538	Jan., 1934	148,792	+ 44,682	17	614,717	423,444	+ 191,273	4 p.c. Db.	98½	80¾	100	4
	South African	13,151	17.3.34	470,323	+ 60,384	51	22,806,630	19,820,292	+2,986,338	—	—	—	—	—
	Victorian	6,172	Jan., 1934	806 239	— 59,834	30	5,113,895	5,386,185	— 272,290	—	—	—	—	—
	Zafra & Huelva	112	Feb., 1934	10,346	+ 264	8	23,255	20,970	+ 2,285	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16.

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. ‡ Average rate of exchange for the week :—This year 31 59/64. Last year 40 59/64.

(Sec. Note)	
	Nil
	Nil
	8
	Nil
	3⅞
	Nil
	Nil
	Nil
	Nil
	Nil
	Nil
	Nil
	—
	Nil
	7¹³/₁₆
	6⁹/₁₆
	Nil
	Nil
	—
	Nil
	Nil
	Nil
	Nil
	Nil
	Nil
	8⁷/₁₆
	Nil
	7⅛
	2½
	6⅛
	Nil
	Nil
	—
	5⅞
	4
	Nil
	—
	3⅞
	5¹³/₁₆
	5⅞
	5⅞
	3¹³/₁₆
	5⅝
	7¼
	6
	6¹³/₁₆
	—
	Nil
	Nil
	—
	7⅞
	5¼
	4⅛
	—
	4
	—
	—
	—